

American Aviation

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Complete Federal Control of Civil Aviation Looms

Federalization

THE Civil Aeronautics Board is about to federalize all the airspace of the U. S. by requiring the federal certification of all pilots and all airplanes.

The significance of this step should not be overlooked in the long-range view of aviation in this country.

There are four major reasons advanced by the Board for taking this all-important step. These should be considered in the light of both present and post-war conditions and their eventual effect upon state's rights.

1. It is the opinion of the legal experts generally that the Civil Aeronautics Act of 1938 empowers the Board to promulgate complete federalization in the interests of public safety, hence the new step is merely the assumption of jurisdiction already granted by Congress.

2. The volume of traffic and the number of pilots and airplanes have increased to such an extent within the past year that more federal control over airspace, airmen and aircraft is indicated in the interest of safety.

3. The civil airways of the U. S., which heretofore have been the only areas actually under federal jurisdiction and regulation (at least the power has been exercised only in this domain), have become obsolete as a matter of actual practice by such developments as radio

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John P. Morris
New CPTA Director

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Plan Revealed to Certificate Airports With Pilots, Planes

By LEONARD EISERER

THE EFFECT of the national defense program on civil aviation has reached the stage where complete federal control of such a activity—both on the ground and in the air—is definitely in the making.

Certification of all civilian pilots and aircraft as a requisite for operation in the U. S. has just been ordered by the Civil Aeronautics Board through an amendment of Civil Air Regulations effective Dec. 1.

Now it is revealed that certification of airports is considered necessary as a final link in the chain of federal regulation.

Government certification of all airports and landing areas has already been recommended for

(Turn to page 23)

Security for Transport Seems Assured With SPAB Approval of 228 Airliners

By CELESTE W. PAGE

AFTER a year of uncertainty and confusion the air transportation system of the country appears assured of security and equipment through a formal declaration of policy by the highest defense authority, the Supply Priorities and Allocations Board, headed by Vice-President Henry A. Wallace.

The airline equipment program for 1942 and the first half of 1943, as recommended by the civil aircraft committee and already ap-

proved by the Joint Aircraft Board, was referred up the line to SPAB for final clearance contrary to original plans and for the specific purpose of setting a precedent.

Since SPAB was created by the President's defense reorganization to serve as a central planning board acting not only out of consideration for Army needs, but also in accordance with the best interests of the defense program as a whole, any policy established by it supercedes the decisions of any other

agency of the government except the President himself.

This board has now given approval for production of 228 airplanes exclusively for U. S. airlines, including both domestic and foreign air transport operations. These include 156 Douglas DC-3s, 20 Douglas DC-4s and 52 Lockheed Lodestars.

Earlier estimates envisioned only about 175 planes, but further studies of productive possibilities and r-

(Turn to page 6)



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Head Bomber Commands



Brig. Gen. Arnold N. Krogstad

COMMANDERS have been designated for three Bomber Commands out of four provided for in the Army air establishment. These commands are components of the four Air Forces, designed to destroy hostile installations and attack enemy troop concentrations.

The new commanders are:

Brig. Gen. Arnold N. Krogstad, chief of the First Bomber Command, First Air Force, Langley Field, Va.

Brig. Gen. John B. Brooks, chief of the Second Bomber Command, Second Air Force, Ft. George Wright, Spokane, Wash.

Brig. Gen. Follett Bradley, chief of the Third Bomber Command, Third Air Force, Drew Field, Tampa, Fla.

Chief of the Fourth Bomber Command, not yet named, will have headquarters at Tucson, Ariz.



Brig. Gen. John B. Brooks



Brig. Gen. Follett Bradley

Army-Navy Briefs

LONG-AWAITED change in regulations now grants Army Air Corps aviation cadets credit for prior flight training, thus enabling the War Dept. to take full advantage of the CAA's pilot training program by accrediting students for previous flying experience. Cadets, within the discretion of the Air Corps supervisor, may now be credited with flying time up to a maximum of half of the 60 hours flight training required for graduation. The move is designed to lighten the growing burden on both instructors and planes.

Cadets receiving partial or maximum credit for flying proficiency will still be required to complete the entire ground course instruction of 140 hours.

NEW AIR CORPS facilities will be built at Santa Ana and Chico, Cal., and at Roswell, N. M., to replace Moffett Field, Cal., which is to be transferred to the Navy next spring. Moffett Field, which has housed the headquarters of the West Coast Air Corps Training Center, originally belonged to the Navy under the name of Sunnyvale Field and was then used as a lighter-than-air base.

TESTING of the XTG-1 and XTG-2, two-place training gliders designed for the Army and equipped with standard flight and navigation instruments is now underway. The XTG-2, manufactured by Schweitzer Aircraft Corp., has been delivered to the Materiel Division of the Air Corps at its Wright Field testing laboratory, while the XTG-1 is undergoing preliminary tests at the plant of the Frankfort Sailplane Co., Joliet, Ill. The XTG-2, slightly the larger of the two, has wing span of approximately 52 feet and length of 25 feet, against 46 feet and 24 feet, respectively, for the XTG-1. The former has gross weight of 860 pounds, the latter 790 pounds.

DESIGNED to meet the need for more Air Corps mechanics trained in changing engines, a special power plant course has been organized for airplane engine experts at the Air Corps Technical School, Chanute Field, Ill. The new course will be open to 30 mechanics every eight weeks, and will provide instruction in the changing of both air and liquid-cooled engines.

Speaking Off The Record

"HIGH PROFITS" by aircraft manufacturers and other defense producers will be the target of a double-barrelled attack by the House Naval Affairs Committee within a few weeks. Chairman Vinson has already introduced a bill setting a limit on profits under all types of government defense contracts and will soon call public hearings at the Capitol to uncover evidence in support of his proposal.

Throughout the summer and early fall this committee has been culling data through questionnaires and field inspections which are being assembled to highlight any excessive profits. Simultaneously, the profit limitation measure, proposing a seven percent top, after passing through three or four drafts has gone to the House Ways and Means Committee, accompanied by an almost identical bill sponsored by Rep. Albert Gore (D. Tenn.). This legislative program is expected to arouse the bitter protest of producers, many of whom claim they are making slight or no profits at all on defense business and are, in fact, losing money fast on research and development work directed toward assuring this country of an air force superior to any other in the world.

Commenting on the rather frequent charges that the aircraft industry is lining its pockets, Rep. J. Buell Snyder, chairman of the powerful military appropriations subcommittee, swung the weight of his position behind the integrity of American airplane manufacturers. "It is very unfortunate," he said, "that the impression has gone out that the airplane industry is making enormous profits. On the contrary, the defense industry that has stepped ahead in production has been the aircraft manufacturing industry. They have exceeded all expectations and they have used private capital to such an extent that if hostilities abroad were to cease abruptly and combat plane orders were cancelled, every plane maker in the country would be bankrupt unless the government saw fit to make adjustments for them."

Simultaneously, the industry received a tribute from the ranking Republican member of Snyder's committee, Rep. Albert J. Engel, who is usually inclined toward the isolationist view. But Mr. Engel points out that the rapid strides in aeronautical engineering are far more significant than the unprecedented expansion of production or the soaring numbers of dollars spent. "At the beginning of the war we were from three to five years behind European countries in military airplane design," he said, "but today our industry is far ahead of any other country in the development of modern military aviation."

A NEW FEDERAL AVIATION LAW is likely to develop from studies now underway by the Civil Aeronautics Board, the airlines and the House committee investigating airline accidents—a law governing the liability of aircraft operators, both commercial and private, for loss of life or property.

The problem has been slowly simmering for five years, but is apt to reach the boiling point this autumn. At present aircraft liability is subject to state laws which vary widely or to common law practices which are chaotic and unapplicable to modern air transportation. Late last summer the CAB issued a voluminous report covering the entire subject and recommending a federal law—rather than the original idea of a uniform state law—to be known as the Federal Aviation Legislation Act. The Board is now ready to receive comments and suggestions on this report as a basis for final CAB action—expected to consist of recommendations to Congress.

Two years ago, the airlines were inclined to favor such legislation, but currently they have not yet reported to CAB on the pending proposal. A special airline committee is considering the matter and will probably ask CAB for an extension of time from the Oct. 15 deadline to make a formal expression. CAB is looking toward Congressional consideration early in the January session.

"IN WASHINGTON during the past two weeks . . . OPM announced it would crack down with a heavy club on any manufacturers who are abusing their priority ratings to build up stock supplies or to divert materials to non-defense production, a move which will help free bottlenecks hampering aircraft manufacturers . . . CAA continued negotiations with War and Navy officials looking toward CAA control over traffic towers at 80 airports, instead of the original 39, where military aviation is crowding commercial transportation . . . and threatening safety . . . Bills were introduced in Congress to establish an aviation academy to train commissioned officers for the Army and Navy air forces . . . Repeal of the Neutrality Act became a serious issue portending a re-opening of the air and sea lanes to belligerent areas for speedier delivery of aircraft and other war supplies to Britain and Russia . . .

Efforts of the OPM Labor Division to persuade the unions to cooperate in a regional labor stabilization program for aircraft modeled on the shipbuilding agreement appeared completely balked as the unions continued insistence on plant-by-plant negotiations . . . Congress finally passed the property seizure bill but forbid requisition of plant equipment and machinery not "idle" . . . Senator Mead proposed that the Truman committee investigating national defense be increased by adding three more senators . . .

Jesse Jones won praise from the House of Representatives for congratulating the airlines on their 1941 safety record . . . The Navy announced an order for two 24-place gliders for troop transport experiments, but reaffirmed opposition to a wide-scale glider pilot training program . . .

C. W. P.

Northrop's 'Flying Wing' Makes Debut on the Front Page But Mystery Remains About This Mystery Plane

THE U. S. Patent Office has become a treasure chest of military secrets. Seldom does one leak out. But such things happen in the best of government offices. So it was not long ago that Patent Design No. 127,185 hit the front page.

Mysterious 127,185—officially termed "a new, original and ornamental Design for an Airplane"—was filed at the office on Nov. 20,

"mystery plane" has for some time been common gossip within the industry, and not only the War Dept. but several aviation journals have been withholding information on it for months.

AMERICAN AVIATION, like other publications, has from time to time complied with War Dept. requests to withhold information on stories of this nature. In fact, the editors

the prototype stage. Only a model has been flown, they explain, although indicating that tests to date have been highly successful.)

It is no secret that the Northrop company has been experimenting with novel plane designs, or that John Northrop has long been interested in a ship which would approach the "perfect plane", one in which the lift/drag ratio reached 100 (the Wright Brothers' trail blazer maximum was six, a modern transport's 15).

Whether John Northrop has finally found the answer is something even the Army will not know until test upon test has been made. There have been "flying wings" before.

Northrop, long working on his basic theory for a "perfect" airplane, is quoted as having said about a year ago:

"I hope this plane will be a major contribution to aeronautics both in performance and in simplification of structure. The principle it embodies, I hope, will cut the

An Army-Navy Patent Advisory Board is the ruling body. If a patent appears to have merit, Board members can advocate secrecy. Certain categories of patents—including aerodynamics, ordnance and chemical items—are automatically referred to the Board upon receipt of such applications at the Patent Office.

Somehow the Northrop patent, Design 127,185—was handled through routine channels and the information concerning it placed in the public files. Patent Office officials are not talking much about the incident, but are understood to have acknowledged that the War Dept. had an opportunity to place the Northrop design on the restricted list. Nor is there much talk about it in the War Dept., but several Army officials have admitted that someone in the Army "bungled" the situation.

At any rate, Design No. 127,185 has become the Northrop "flying wing." But most of the mystery about the "mystery ship" remains.



Front Elevational View

1940, by John K. Northrop, president and chief engineer of Northrop Aircraft, Inc.

On May 13 of this year Northrop was granted a patent on the design, and it immediately felt the protecting hand of the U. S. Army.

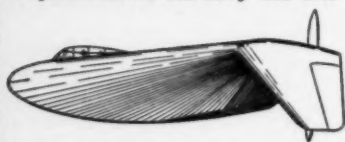
Somewhere that hand slipped and 127,185 suddenly became a publicized Northrop mystery plane to inspire newspaper wordage such as "manta ray" and "pterodactyl."

One day late last month an artist's sketch and a story of the "flying wing" appeared on the front page of the Los Angeles Times. The second page carried four views from the official patent design (the same views that are reproduced on this page). These views had earlier been published in routine fashion with an announcement of the patent award in *Aero Digest*, technical aviation journal.

Most eastern metropolitan dailies judiciously forgot about the story, but receipt of the Times in Washington was followed by hurried phone calls and telegrams from east to west and back again, along with inspired conferences at the War Dept.

Since last May the Department had been "sitting" on the story. Even in May some officers suggested that a brief announcement would safeguard a leak and prevent the guesswork accounts they feared would follow. Other officers preferred the Department's established policy of waiting until preliminary tests were completed before making an official statement.

Since the "expose," the matter has been handled by top officials in the Department. As this story was writ-



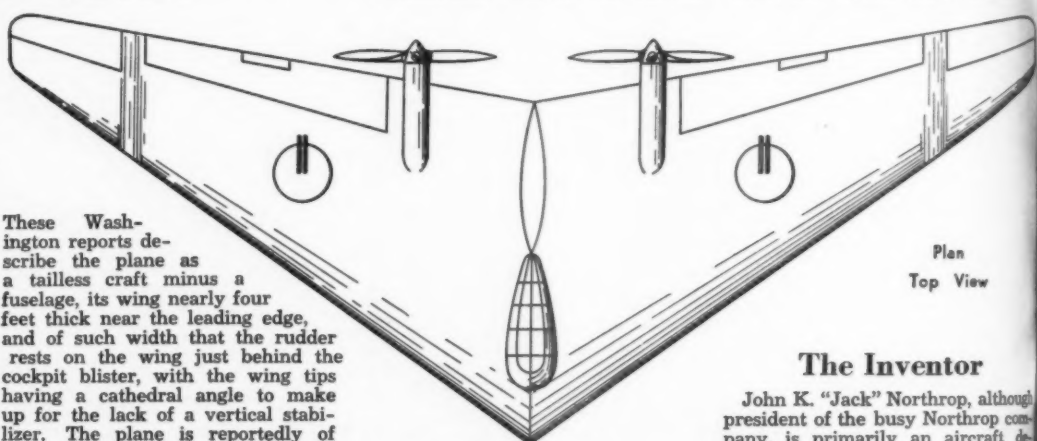
Side Elevational View

ten no official announcement had been made. Army officers have indicated that the Department would not deny the Times account, and may make public a brief and somewhat innocuous statement.

While the War Dept. has kept the faith, the Northrop company has done likewise, well aware of the implications. But a Northrop

have refrained from reporting reliable accounts of a "flying wing" prototype, test flown on the west coast.

This model, it has been reported in Washington, is designed to exceed 500 miles per hour, climb almost straight up, and generally outfly the latest pursuit ships.



Plan
Top View

These Washington reports describe the plane as a tailless craft minus a fuselage, its wing nearly four feet thick near the leading edge, and of such width that the rudder rests on the wing just behind the cockpit blister, with the wing tips having a cathedral angle to make up for the lack of a vertical stabilizer. The plane is reportedly of ultra streamline design, equipped with tricycle landing gear, having two four-bladed pusher propellers and two radial 1600 hp engines capable of sending it into high altitudes.

The Los Angeles Times' description of the Northrop model, although excluding many of the characteristics mentioned above, closely parallels this "flying wing" description.

After reporting that studies of the design indicate that gun turrets lower into the wing, and that the guns are cannons, the Times states: "If this were true, it was pointed out, the plane would be the most deadly fighter ever developed." The newspaper reports that the Northrop plane was "flown months ago at Muroc Dry Lake" as a "scale model" and since then "has been undergoing tests at the Northrop plant in several different models."

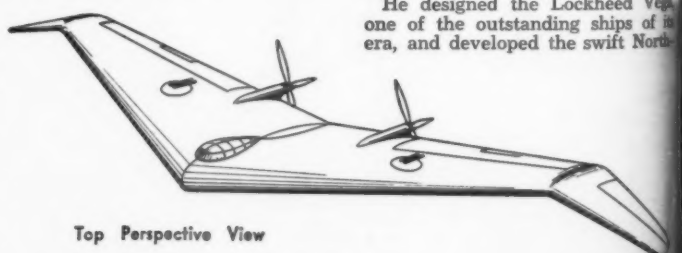
But the Times' account concludes: "All ideas of the ship, its size, actual performance, construction, equipment and intended use, however, remain conjecture, for, other than the published design, all information is secret."

(Army officers point out that the Northrop plane has not yet passed

normal drag co-efficient in half.")

But if inventor Northrop was referring to what is now Design No. 127,185 in the patent office, he did not say so.

How did 127,185 escape from the office files? The Patent Office, by law, is required to make public



Top Perspective View

any patents granted. Under recently passed legislation the office may refrain from granting a patent (to protect military secrets) but may make a private agreement with a patentee to assure him all of the protection provided in a formal patent grant. This procedure prevents the information from reaching the public file.

rop Alpha; the famous Northrop Gamma and Delta series of planes.

Northrop also pioneered in the development of military attack planes with the A-17 and later the A-17A, both highly regarded by the Army. Later the 8A export version of the A-17 added 25 mph. to the former's 245 miles.

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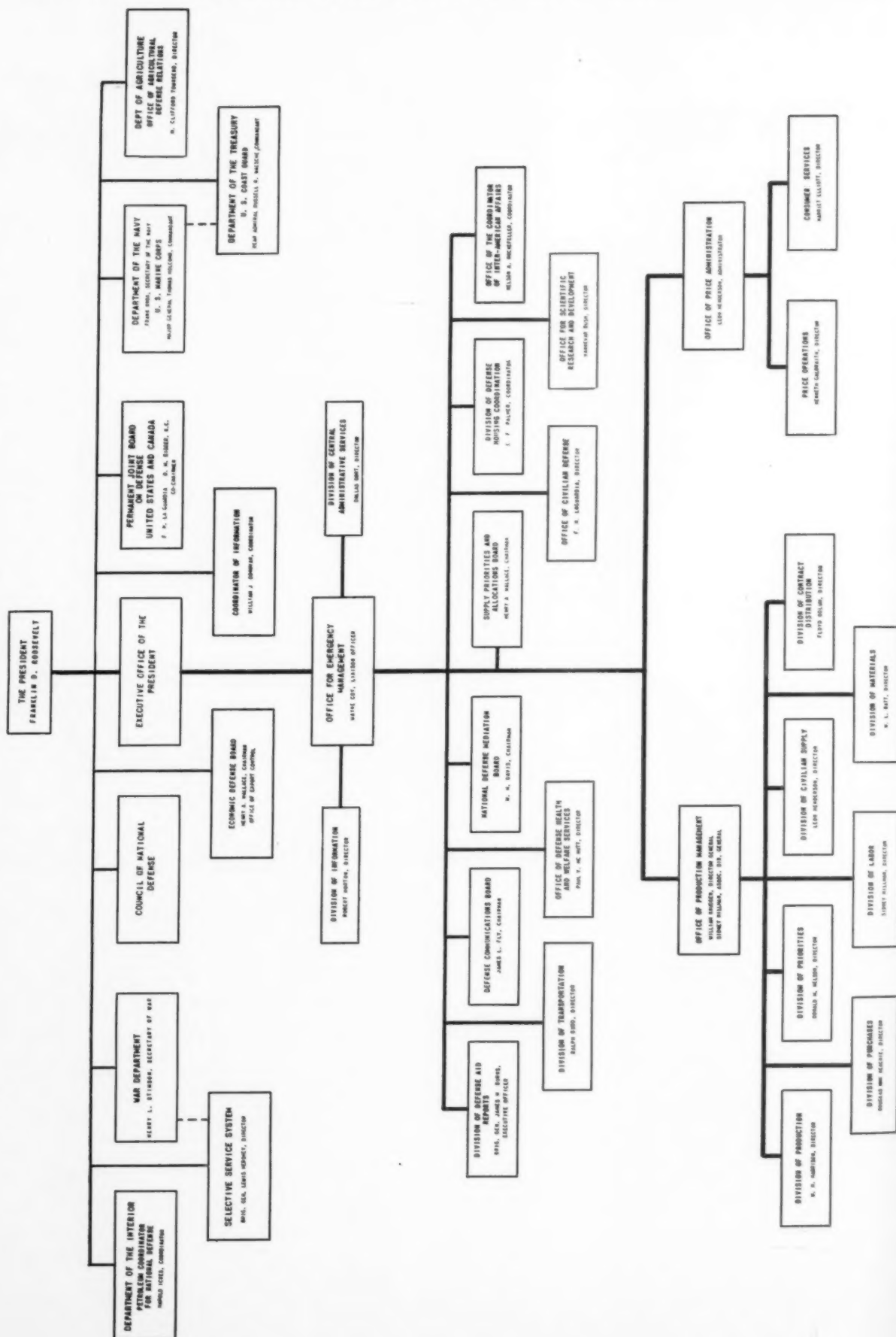
It takes the hands of thousands of men to fling 80-ton battle-planes into the sky, but all the hands in the world would be useless without trained minds to create, design and direct. The aircraft industry is forced by the national emergency to accept many untrained or "quickie course" men. It cannot survive without the trained minds to lead them—men whose skill must have the type of man who works Aviation as his life work and prepares for the responsibilities of an Aviation career by proper training. Curtiss-Wright Technical Institute, under the personal supervision of Walter L. C. Moseley, President and sole proprietor of America's most distinguished school of aviation, is the training of Aeronautical Engineers and Master Aviation Mechanics. Its accumulated experience of many years in technical and practical instruction supplies the aviation industry with graduates thoroughly qualified

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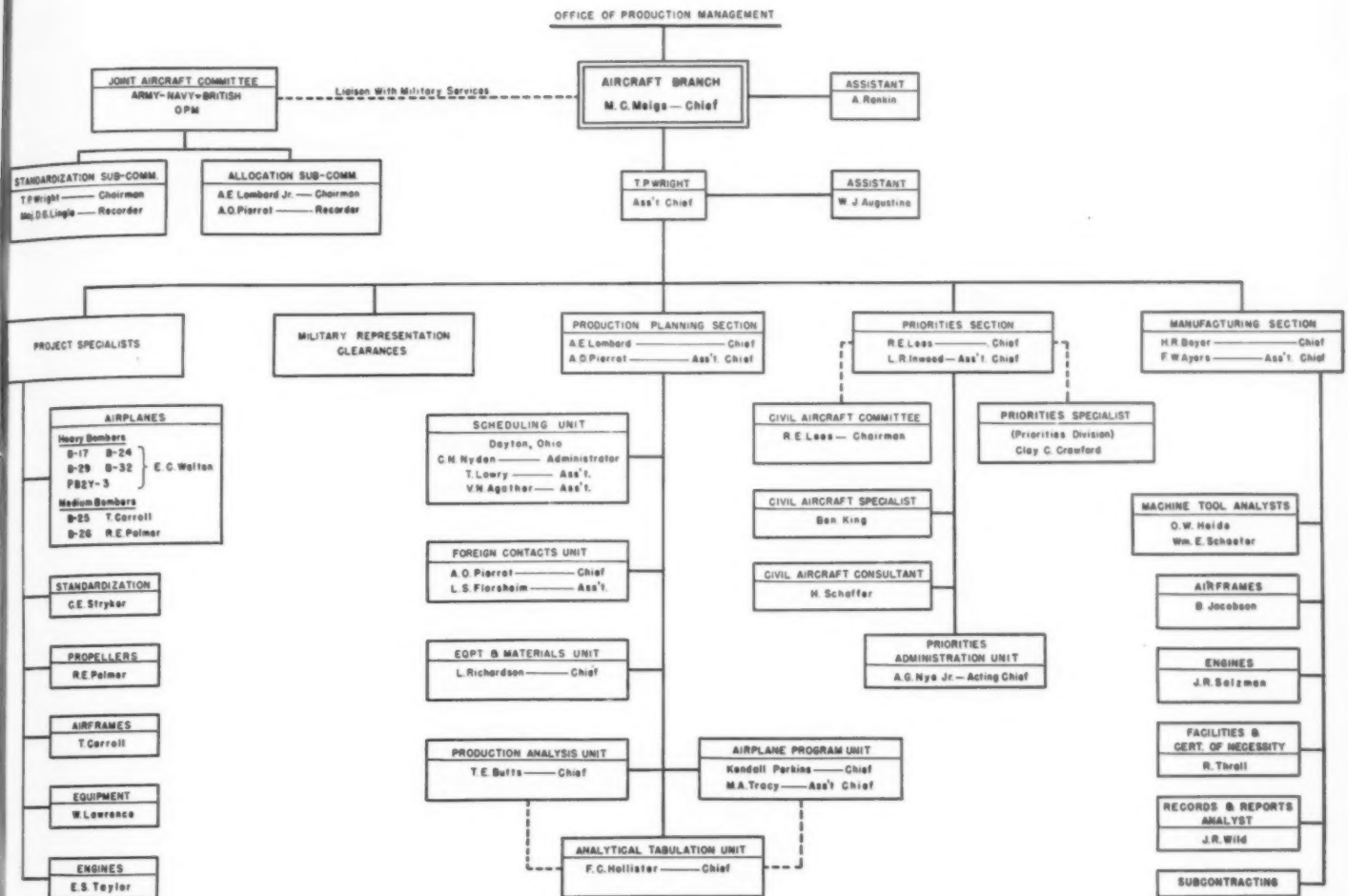
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as supervisory personnel and is now being utilized in the National Defense Program by the U. S. Army Air Corps in the training of hundreds of enlisted men as Air Corps mechanics, while its flying affiliates, Cal-Aero Academy, Loma Flight Academy and Polaris Flight Academy, are extending primary and basic training to U. S. Army Flying Cadets and R. A. F. Flying Cadets at their two great training fields in Southern California. With a proved and tested curriculum and a faculty of practical engineers and technicians, we feel profound satisfaction in the industry's call for men "trained to perfection" . . . the career men on whom aviation's future depends. Curtiss-Wright has a new building approximately 2,000 students, of whom approximately 600 are Army enlisted men, and is prepared to expand to accommodate still more students if necessary in the interests of National Defense.

Latest Official Chart of Defense Administration



New Organization of OPM Aircraft Branch



Security for Transport

(Continued from page 1)

adjustments of figures translating space accommodations into numbers of planes resulted in raising the total to 228 aircraft.

In allotting this manufacturing capacity for commercial production, SPAB reminded the airlines that the Army would have first call on the planes when completed should a turn of events in the war situation make this a military necessity.

The board also entered a proviso that "if while they are being built, their construction interferes in any way with construction of Army planes or other goods for the Army, the Army orders are to have the right of way." A natural safeguard in time of war, this provision is not expected to be enforced except under actual conditions of acute

emergency not now foreseen, according to officials, who emphasized that it is in no sense an escape clause for military infringement on the policy established by the board.

By agreement with the airlines and with the War and Navy Departments, the board directed that the planes produced under the program should be completely standardized and, further, modified to some extent in order to render them more readily convertible to Army or Navy use in the event of emergency.

Specific design changes mentioned include reinforced flooring and wider doors for adaptation to troop transport service.

Reference to the new Lockheed Constellation, earlier approved for civil aviation by the Joint Aircraft

Committee is conspicuously absent in the SPAB decision.

Officials said, however, that the Constellation is "not definitely out," but simply delayed until the three prototypes now in production are completed and through test flights. It is understood that the board decided it would be undesirable to authorize the manufacturer to draw on the increasingly short material market for Constellation production before the new ship has passed beyond the experimental stage.

SPAB made no attempt to allocate equipment to the individual airlines, a task now under consideration by the civil aircraft committee in cooperation with the Air Transport Association. In any case, the program is not scheduled to become effective before January 1, 1942, extending through June, 1943.

Standardization of equipment to conform to Army requirements, however, opens the way for negotiation with the War Department for

earlier delivery in emergency cases by diversion to the airlines of planes coming off the line under Army contracts which could be replaced later from airline orders.

Any further requisitioning of airline equipment for the British such as that occurring last July is considered extremely unlikely in the light of these developments. It is thought that any such action would be in exact contradiction to the precedent established by SPAB last week which, in effect, is interpreted as recognizing the airline transportation system as an essential cog in the defense machinery.

Lacking official verification, it is assumed that transport needs of the British and Latin American countries—other than Pan American operations—will be handled through additional plane production not included in the 228-plane domestic airline program.

Midwest Aircraft Output to Soar in '42

Huge Labor Demand Looms as New Plants Swing Into Production

By CHARLES ADAMS

AIRCRAFT production in the Middle West should be in a position to share the spotlight with Pacific Coast output by next summer, thereby achieving the War Dept.'s plans to locate a major portion of new defense plants in areas least vulnerable to attack.

The program to construct aircraft facilities in the vast Central area of the U. S. has been steadily taking shape since the beginning of the all-out defense effort in June 1940. A trend to locate defense plants in the Middle West was noticeable as early as the summer and fall of last year, becoming more pronounced in 1941 with the launching of the expanded bomber programs in the spring.

The next step, which has become evident only during the past five or six months, was the allocation of an increasing portion of aircraft supply contracts to the newly-authorized plants. Now, with many of the new units either completed or rapidly nearing completion, a third development has become apparent—a

shift in the greatest demand for aircraft labor from the coasts to the Central area.

Latest Phase Disclosed

This latest phase of the defense plant location program is strikingly disclosed in latest Bureau of Labor Statistics figures which reveal a tremendous upswing in the number of aircraft workers needed in the Midwest region in the next 10 months as new bomber facilities and additional engine units built by automobile manufacturers begin production.

As shown in the accompanying table, total employment in airplane, engine and propeller plants of final assembly will rise from 316,526 in August of this year to over 714,000 in Aug. 1942, an increase of 397,513 or about 125%. But even more spectacular than the doubling of total final assembly workers in all parts of the U. S. is the part played by new Midwestern plants.

Of the 397,513 increase in the 12-month period, around 210,915 or 53% of the new workers will be hired in the Interior, including the Canadian border region; 108,251 or 27% in the West Coast area and 78,347 or 20% in the East Coast region.

GOVERNMENT AIRCRAFT CONTRACTS TO MIDWEST AREA SOAR

(Total "public knowledge" prime contracts of \$50,000 or more awarded by War and Navy Depts. for planes, engines, propellers, parts and equipment since June 1940. Foreign and commercial orders not included.)

State	Sept. 1, 1941	Apr. 1, 1941
Michigan	\$374,000,000	\$244,000,000
Texas	261,000,000	215,000
Kansas	241,000,000	37,000,000
Ohio	219,000,000	13,000,000
Nebraska	167,000,000	00
Oklahoma	162,000,000	1,860,000
Indiana	133,000,000	119,000,000
Missouri	69,000,000	66,000,000
Illinois	41,000,000	3,000,000
TOTAL	\$1,667,000,000	\$484,075,000
U. S. TOTAL	\$4,770,331,000	\$2,405,841,000

PER CENT OF WAR AND NAVY DEPT. CONTRACTS RECEIVED BY STATES LISTED BETWEEN JUNE 1940 AND APR. 1, 194120%

PER CENT OF WAR AND NAVY DEPT. CONTRACTS RECEIVED BY STATES LISTED BETWEEN APR. 1, 1941 AND SEPT. 1, 194150%

TOTAL EMPLOYMENT IN THE AIRCRAFT INDUSTRY* AT SITE OF FINAL ASSEMBLY

Shown by Region

Regions	Actual Employment Aug. 1941	To Be Hired by Aug. 1942			
		Total	Airframes	Engines	Propellers
Total	316,526	397,513	315,716	76,881	4,916
Pacific Region	137,406	108,251	108,029	222	00
Atlantic Region	101,231	78,347	65,344	8,393	4,610
Interior Region & Canadian Border Area ...	77,889	210,915	142,343	68,266	306

*These figures include only military plane manufacturers and their subcontractors; specifically excluded are manufacturers of accessories and non-military aircraft. Table is based on Bureau of Labor Statistics estimates.



WITH 11,000 TONS of the 27,000-ton structural steel framework for the windowless bomber assembly plant at Ft. Worth already in place and a portion of the 4,000-ft. long assembly shop already under roof, the Austin Co. recently started erection of the shatterproof side walls.

By contrast, during the first few months of this year, 45% of all aircraft final assembly workers were located on the West Coast, 45% on the East Coast and 10% in the Interior. The West Coast had 59% of all U. S. airframe workers in plants of final assembly, and 1% of all engine workers. The East Coast had 33% of all airframe workers (including those at Buffalo, N. Y.), 74% of all engine workers and 87% of all propeller workers. The Interior had but 8% of the airframe workers, 25% of the engine workers and 13% of the propeller workers.

Policy Followed

Evidence of fulfillment of the Army high command's policy to erect new aircraft plants between the Rocky and Appalachian Mountains was apparent in the first 10 months of the defense program when the government allotted the bulk of its funds for new facilities. That the policy is still being carried out is verified in an analysis of Defense Plant Corp. authorizations during the summer of this year.

However, the long-range program which provided for the construction of new defense plants in the Central area was often obscure to critics of the defense effort, who pointed to the concentration of aircraft supply contracts in a few districts—Los Angeles, Seattle, San Diego, Paterson, N. J., Hartford, Conn., Baltimore and Buffalo.

That these sections did receive the lion's share of the aircraft awards during the first 10 months of the defense program cannot be denied. Principal reason was that the government, in its desire to get aircraft as soon as possible, necessarily had to depend upon established producers.

New Plants Ready

But a large portion of the new aircraft units, authorized by the government many months ago, are now completed or nearing completion. Already government supply contracts for aircraft have begun to go in increasing measure to Midwestern plants.

During the first part of this year, as previously pointed out, airframe plants of final assembly in California and Washington employed 58% of all U. S. airframe workers; the East Coast 33% and the Interior 8%. However, government authorizations for new airframe plants, which totaled \$235,000,000 during the first 10 months of the defense program, were: West Coast 29%, East Coast 35% and Interior 36%.

It is the completion of the four government-owned bomber plants as well as the new \$47,000,000 Ford assembly unit at Ypsilanti, Mich., which will be the largest factors in creating the demand for aircraft workers in the Midwest between now and next August.

Occupation Date Set

Ford expects to occupy its new unit, which will turn out complete Consolidated B-24 heavy bombers, as well as subassemblies for two other plants, soon after the first of 1942, with peak employment expected to be between 40,000 and 60,000 workers.

First of the government-owned bomber plants is now almost completed at Kansas City, Kan. A crew is already engaged in setting up machinery, with tools and parts arriving in ever-increasing numbers. Production on North American B-26 medium bombers is scheduled to get under way the first of next month with employment to total 12,000 when capacity is reached. The \$11,250,000 unit, which includes 1,000,000 sq. ft. of floor area, will be supplied with over 50% of the parts to be assembled by General Motors Corp.'s Fisher Body Division.

The Corps of Engineers has set Dec. 1 as the completion date of the \$15,985,000 assembly unit at Omaha, Neb., which will be operated by Glenn L. Martin Co. This plant, with an area of 1,400,000 sq. ft., will turn out B-26 medium bombers, employ around 17,000 workers and be supplied with parts and subassemblies by Chrysler, Hudson and Goodyear Tire & Rubber Co.

Heavy Bomber Plants

Completion of the two heavy bomber plants at Ft. Worth, Tex., and Tulsa, Okla., has been set for Jan. 1 and Feb. 1, respectively.

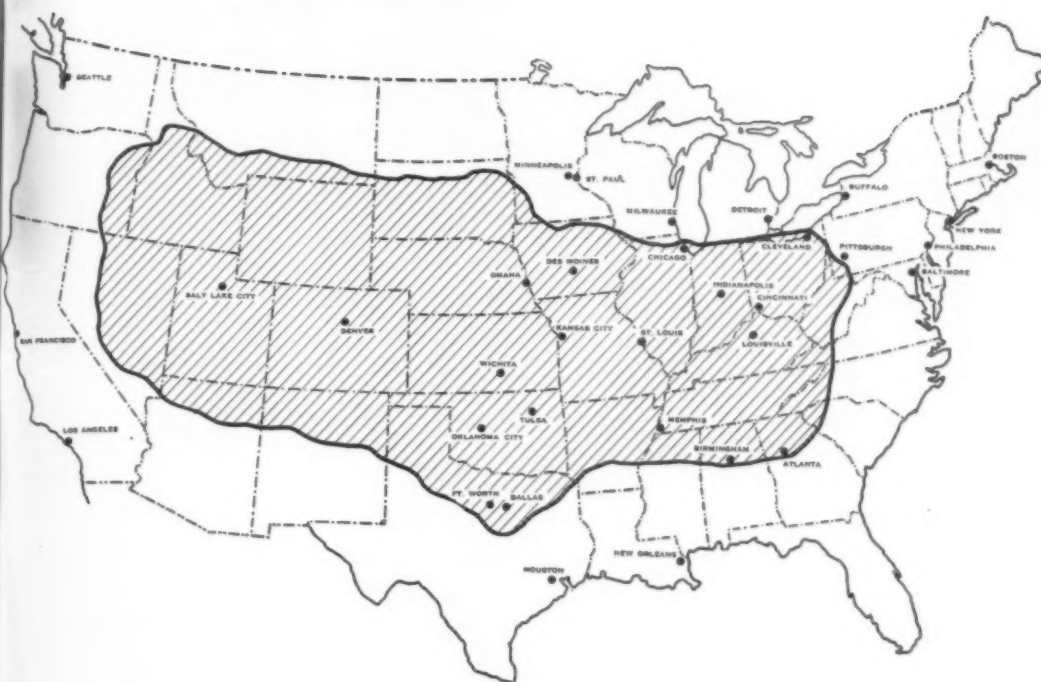
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Strategic Defense Plant Area



These units, costing around \$25,000,000 each, are almost identical in design. Each will contain approximately 1,500,000 sq. ft. of floor space and employ about 15,000 workers. Parts for the Consolidated B-24 heavy bombers, which will be assembled at Tulsa and Ft. Worth, will be supplied by Ford.

Latest estimates of production peaks at the five bomber plants are: Ford, 75 complete B-24's monthly (plus subassemblies to be shipped to Ft. Worth and Tulsa at the rate of 85 monthly to each plant); Tulsa, (to be operated by Douglas) 65 B-24's monthly; Ft. Worth, (to be operated by Consolidated) 65 B-24's monthly; Omaha, (Martin) 100 B-26's monthly; Kansas City, (North American) 100 B-25's monthly.

Thus, by the first of February, five new Midwest bomber plants will be hiring men at an increasing rate, with the total expected to pass 100,000 when maximum production is reached. Moreover, it is expected that an additional 80,000 workers will be employed making parts and subassemblies for the bombers in the automotive plants (other than Ford) and associated industries

Hose Withstands Bullets

Airplane fuel hose that will swallow bullets one-half its own diameter has been developed by U. S. Rubber Co. and is now in mass production.

In one test, a piece of one-inch hose only three feet in length was pierced by 13 50-calibre machine gun bullets with the loss of only a slight amount of 100-octane gasoline.

Already a half million feet of the self-sealing material has been delivered for use by the Army and Navy.

which have the task of furnishing 78% of the total man-hours required for building a complete bomber under the cooperative setup.

Indicative of the spurt in hiring in the Midwest region are the estimates of personnel managers in the Central area regarding employment in seven cities during last July and the number expected by next fall. They are:

City	July, 1941	Fall, 1942
St. Louis	4,400	10,500
Kansas City	535	15,925
Wichita	12,550	18,500*
Omaha	00	15,000
Tulsa	200	14,250
Dallas	2,500	10,000
Ft. Worth	00	12,000

TOTALS 20,185 96,175

* Probably does not include workers to be employed at \$17,500,000 Boeing addition now under construction.

Meanwhile, a shift in emphasis from the East Coast to the Interior has been evident in propeller and engine plants of final assembly. Early in 1941, plants on the East Coast employed 74% of all aircraft engine workers, the West Coast 1% and the Interior, including Michigan, 25%. However, by spring of this year, the government had allotted \$300,000,000 for new engine facilities as follows: East Coast 30%, West Coast 0% and the Interior, including Michigan, 70%.

While propeller plants of final assembly on the East Coast employed 87% of all U. S. propeller workers at the start of this year, between June 1940 and Apr. 15, 1941, government authorizations for new propeller facilities were: East Coast \$18,438,931 or 66.5%, Interior \$9,309,324 or 33.5%.

DPC Allocations

That the trend to locate defense facilities in the Interior is not con-

fined to plants of final assembly may be seen in figures covering Defense Plant Corp. allocations for all types of aircraft plants between May 1 and Oct. 1 of this year.

During the five-month period, approximately \$300,000,000 was allocated by the loan agency for parts and accessories factories as well as plants of final assembly. Leading beneficiary was Michigan with 20 projects costing \$90,000,000, followed by New York with six projects costing \$47,000,000. Ohio nine projects, \$27,000,000; Kansas two projects, \$18,000,000 and New Jersey nine projects, \$17,000,000. In 11th place, behind Washington, Pennsylvania, Illinois, Wisconsin and Missouri, was California.

Supply contract figures during recent months also clearly reflect the coming importance of Middle West aircraft production. California firms on Sept. 1 still held over 25% of the total War and Navy Dept. contracts awarded since the beginning of the defense program in June 1940 and more than the combined total of the next three states—Maryland, New Jersey and Michigan. This is a decline of but 2% in five months.

It is, however, significant to note that of the \$2,364,490,000 in contracts for planes, engines, propellers, parts and equipment awarded by the War and Navy Depts. between Apr. 1 and Sept. 1 of this year, the share of only nine Midwestern states was \$1,183,000,000, or over 50% of the total of \$2,364,490,000 allotted in the five-month period.

Thus it is evident that the government, first by the allocation of funds for new facilities and secondly by the granting of an increasing number of supply contracts to the area during recent months, has paved the way for a tremendous growth in the Midwest's aircraft activity in the coming year.

Beech Deliveries Rise to 702% of Year Ago

PRELIMINARY unaudited figures indicate that deliveries by Beech Aircraft Corp., Wichita, Kan., totaled over \$1,886,000 last month, practically equivalent to deliveries for the entire fiscal year of 1940, company officials announced recently.

Comparing Oct. 1, 1940 with Oct. 1, 1941, the various ratios of indices of activity at Beech are as follows, the percentage figure representing the ratio of 1941 to 1940 in all cases:

Deliveries during the months of Sept. 1940 and 1941, 702%; inventory of raw material and work in process as of Oct. 1, 1940, and Oct. 1, 1941, 670%; total floor area available as of Oct. 1, 1940, and Oct. 1, 1941, 550%; total employees Oct. 1, 1940, and Oct. 1, 1941, 403%; backlog of uncompleted work Oct. 1, 1940, and Oct. 1, 1941, 390%; deliveries during the fiscal years of 1940 and 1941, 430% (adjusted to a common basis).

Despite these increases, Beech officials declare that present production is as yet "only a fraction of the ultimate planned output level, which should be reached by Mar. 1942."

Beech has engaged in an extensive subcontracting program which when fully carried out will result in from 30% to 40% of its parts and subassembly fabrication being performed by subcontractors. At the present time, floor area in use by subcontractors exclusively for Beechcraft production constitutes 30% of the floor area of the expanded Beechcraft factory itself.

Present backlog of the company totals over \$88,000,000.

NA Medium Bombers Purchased By Dutch

North American Aviation, Inc., last month announced the completion of negotiations with the Netherlands Purchasing Commission for NA-40B twin-engine medium bombers and spare parts to be supplied to the Netherlands East Indies Army Air Corps.

While the number of planes was not revealed, total value of the contract was set at approximately \$24,000,000.

The NA-40B is the export model essentially similar to the B-25 medium bombers now being delivered to the U. S. Air Corps from the Inglewood plant and soon to be in production in the new Kansas City assembly unit.

When the Dutch deliveries begin in 1942, the bombers will be flown across the Pacific to the Netherlands Army bases.

Chinese Leave for U. S.

Selected for a six-month course in aviation in the U. S., 160 Chinese youths nominated by the Chungking government early this month left for America, according to Hong Kong reports.

Jacobs & General Electric Allotted Funds For New Engine, Supercharger Facilities

JACOBS Aircraft Engine Co. and General Electric Co. received the bulk of federal funds for expansion of aircraft facilities during the past fortnight, the former entering into a lease agreement with the Defense Plant Corp. providing for the construction of a new \$13,056,327 plant at Pottstown, Pa., for the manufacture of Pratt & Whitney engines and the latter receiving a \$25,011,838 DPC authorization for a plant at Ft. Wayne, Ind., for the production of turbo-superchargers.

While dealing out funds for new facilities, the government did not neglect supply contracts during recent weeks, Ford receiving Air Corps contracts of \$231,742,500 and \$182,955,559, the former for Consolidated B-24 heavy bombers and spare parts and the latter for Pratt & Whitney Double Wasp engines.

The Jacobs agreement follows the award of an \$11,500,000 Air Corps letter of intent in July for purchase of the engines, said to be of the 450-hp. Wasp Jr. type to be turned out under license from United Aircraft Corp.

Land and buildings for the new unit, which will be situated near the present Pottstown plant, will cost \$5,003,306 and equipment \$8,053,021. Completion of the new unit will force Jacobs to double or triple its present personnel of 1,000, now working on orders from the War Dept. and Canadian government for 245 and 330-hp. engines for advanced trainers.

Turbo-superchargers to be manufactured at the new 400,000 sq. ft. Fort Wayne plant will augment production at General Electric's expanding West Lynn and Everett, Mass., units. General Electric, which already holds large Air Corps supply contracts for supercharger equipment, will spend \$8,427,471 for land and buildings and \$16,584,367 for machinery and equipment at the Indiana site. Approximately 6,000 workers will be employed at peak production.

Other Defense Plant Corp. authorizations and government supply contracts for aircraft announced recently are:

DEFENSE PLANT CORP.:

BRIGGS MANUFACTURING Co., Detroit, Mich., \$1,046,143 for equipment to be used in Detroit plant for production of aircraft parts. This commitment is in addition to previous authorizations to Briggs totaling \$9,136,642 for the same purpose.

FLEETWINGS, Inc., Bristol, Pa., \$354,035 increase in original \$2,483,919 authorization for additional facilities to be used in the production of aircraft equipment.

GOODYEAR AIRCRAFT Corp., Akron, O., \$499,889 for machinery and equipment for 125,000 sq. ft. plant at Litchfield Park, Ariz., to be used in production of "flight decks and other aircraft parts." This is in addition to a previous \$3,642,280 authorization for a plant

at Akron to manufacture aircraft equipment.

NORTH AMERICAN AVIATION, Inc., Inglewood, Cal., \$129,182 increase in present lease agreement of \$3,095,323 for additional facilities to be used in the manufacture of aircraft.

WRENTHAM PRODUCTS Co., Wrentham, Mass., \$442,258 for construction and equipping of a plant at Wrentham to be used in the production of aircraft engine studs.

CRUCIBLE PRODUCTS Co., Lorain, O., \$20,348 for machinery and equipment to be used in Lorain plant for the manufacture of aircraft bearings.

GENERAL ELECTRIC Co., Schenectady, N. Y., \$774,735 for machinery at plants in Fort Wayne, Ind., and Philadelphia, Pa., to be used in the manufacture of aircraft equipment.

SCOTT & WILLIAMS, Inc., Laconia, N. H., \$609,331 for construction of plant at Laconia to be used in the production of aircraft instruments.

AIR CORPS CONTRACTS:

DOUGLAS AIRCRAFT Co., Inc., Santa Monica, Cal., \$6,061,385, planes and spare parts.

IRVING AIR Chute Co., Inc., Buffalo, N. Y., \$1,373,250, parachutes and assemblies.

FOLMER GRAFLEX Corp., Rochester, N. Y., \$4,297,752, aircraft cameras.

LEECE-NEVILLE Co., Cleveland, O., \$1,704,250, generator and panel assemblies.

ALLISON DIVISION, General Motors Corp., Indianapolis, Ind., \$2,203,734, \$4,419,359, \$1,573,958, engine parts.

VULTEE AIRCRAFT, Inc., Downey, Cal., \$1,044,400, airframe spares.

DELCO-REMY Division, General Motors Corp., Anderson, Ind., \$868,825, generator assemblies.

WESTINGHOUSE ELECTRIC & Mfg. Co., Dayton, O., \$685,000, generator assemblies.

WESTON ELECTRICAL Instrument Co., Newark, N. J., \$1,554,435, aircraft instruments.

STANDARD AIRCRAFT Prod-

Wesson Head Retires



Smith

J. H. Wesson, founder and president of the Wesson Co., national known Detroit manufacturer of tungsten carbide high speed cutting tools, retired from active service recently.

ucts Inc., Dayton, O., \$586,000, thermostat assemblies.

SHELL OIL Co., Inc., San Francisco, Cal., \$506,150, aircraft fuel.

LEWIS ENGINEERING Co., Naugatuck, Conn., \$538,488, thermomometer indicators.

DELCO-REMY Division, General Motors Corp., Anderson, Ind., \$627,248, generator assemblies.

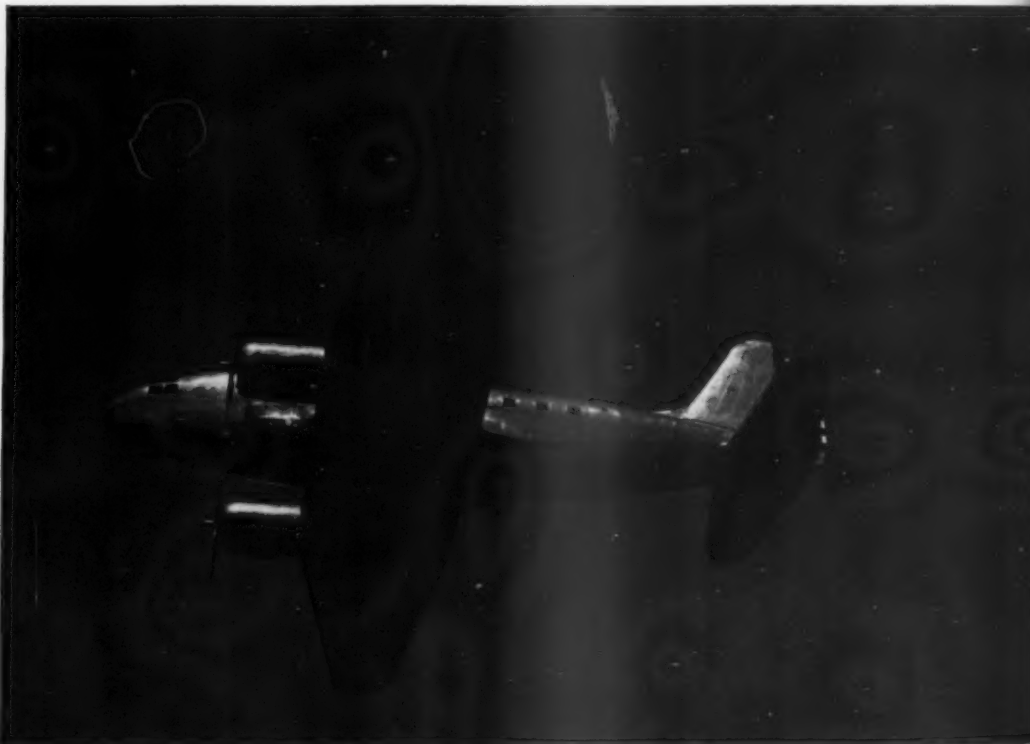
BELL AIRCRAFT Corp., Buffalo, N. Y., \$522,632, gun mount adapters.

RANGER AIRCRAFT Engines Division, Fairchild Engine & Airplane Corp., Farmingdale, N. Y., \$207,988, engine parts.

SERVICE TOOL & Engineering Co., Dayton, O., \$383,520, night vision assemblies.

VULTEE AIRCRAFT, Inc., Downey, Cal., \$490,000, gas tanks.

Army Wants 300 Cargo-Transports



ACCEPTED BY THE ARMY—About 300 of these Curtiss cargo-transporters are being built for the U. S. Army following acceptance and exhaustive flight tests. The craft started out many months ago as the CW-20 twin-engined commercial transport, was converted into an Army transport; additional

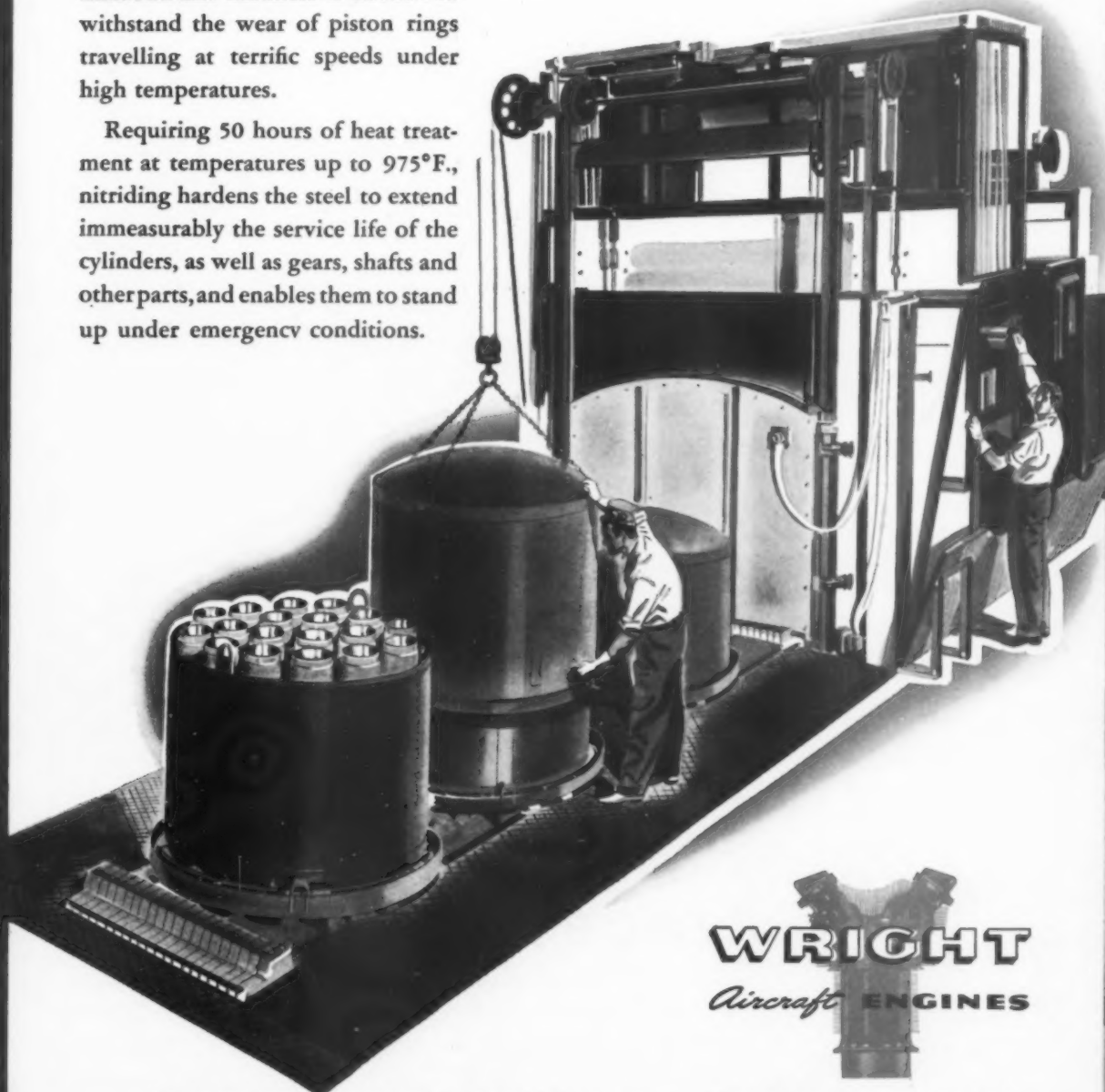
fuel tanks were installed to increase its operating range. Manufacture of the transport—to be designated the C-46—is going forward at Curtiss-Wright's three plants at Buffalo and St. Louis.

HARDEST WEARING SURFACE *in Industry*

ESSENTIAL in the Cyclone engine, with a flight life of 2,000,000 miles, is the thin layer of nitrided steel on the inside of Cyclone cylinder barrels. Hardest wearing surface in industry, this internal "armor" of diamond-like hardness is needed to withstand the wear of piston rings travelling at terrific speeds under high temperatures.

Requiring 50 hours of heat treatment at temperatures up to 975°F., nitriding hardens the steel to extend immeasurably the service life of the cylinders, as well as gears, shafts and other parts, and enables them to stand up under emergency conditions.

Wright today employs the most extensive battery of nitriding furnaces in America to produce in quantity the "armored" parts for its monthly output of engines totalling nearly 2,000,000 horsepower.



WRIGHT
Aircraft **ENGINES**

WRIGHT AERONAUTICAL CORPORATION • PATERSON, NEW JERSEY

Division of Curtiss-Wright Corporation

1411 HOURS PER DAY

Ranger engines in active service at a score of Army and other training fields are now logging an average of 1,411 hours every day in the week, every week in the year!

Air, under controlled pressure, effectively cools the 6 in-line cylinders of the 175 horsepower Ranger engine in the PT-19 Fairchild Trainer.

Despite the hard pounding of training service, despite the varying climatic conditions from Canada to the Gulf, Ranger has proved its thorough efficiency in this mass test.

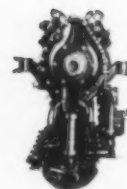
One school, operating 191 Rangers, reports an average oil consumption of one pint an hour; gasoline consumption at eight gallons an hour.

*With Ranger there can be
no compromise with quality*

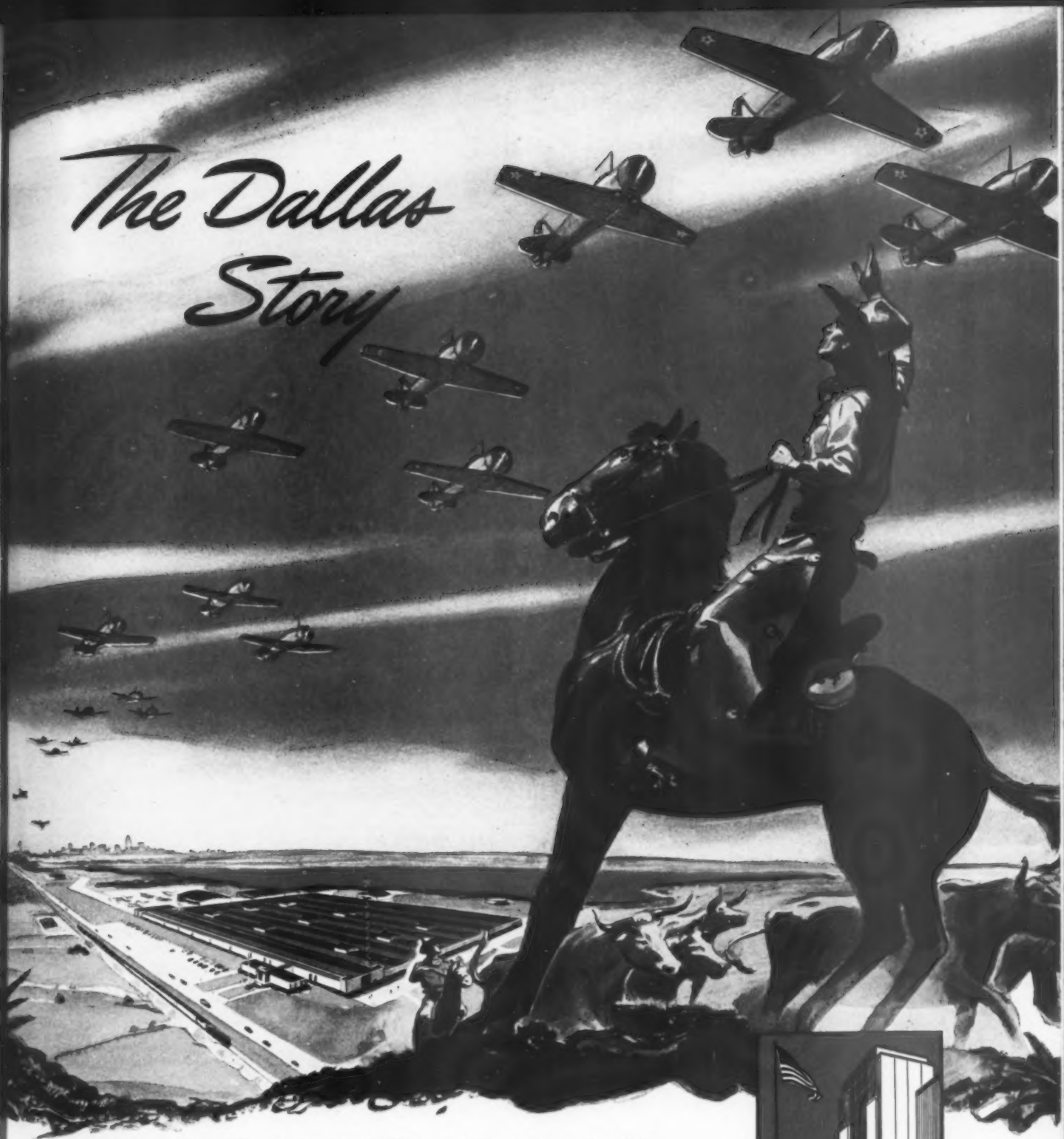


RANGER AIRCRAFT ENGINES

FARMINGDALE, LONG ISLAND, NEW YORK
DIV. OF FAIRCHILD ENGINE & AIRPLANE CORP.



The Dallas Story



FROM PLAIN TO PLANES IN 120 DAYS

What had been a Texas plain 12 miles west of Dallas is now America's first windowless, air-conditioned airplane factory: 25 acres under one roof. It was completed and planes were being delivered to the U. S. Army Air Forces 120 days after construction began. Within three months the new plant had produced twice the number of planes originally scheduled. Fulfilling defense requirements for decentralization of industry, the Dallas achievement is a tribute to industrial teamwork supported by enthusiastic community cooperation.

NORTH AMERICAN AVIATION, INC.

Dallas ☆ INGLEWOOD, CALIFORNIA ☆ Kansas City

★ ★ TO BUILD WITH TEAMWORK IS

the North American Way



★ ★ ★



Parts Manufacturers on the West Coast Facing Common Problems Together

LITTLE publicized and overshadowed by the large airplane producers in the area, more than 350 small parts producers in and about Los Angeles have virtually formed an industry within an industry.

Their number multiplied in response to pressure for spreading defense work to achieve faster and larger production, this group today has over 30,000 employees, mostly skilled, with a constantly growing backlog of from 50 to 100 million dollars.

But two years ago, less than 10% were doing any kind of aircraft business, and probably not more than half were in business at all. They entered the aircraft field and expanded largely on borrowed capital, progressing from a single lathe or press to 20, working 24 hours a day on the chance of paying out in a few years.

Difficult Problems Faced

This mushrooming industry is not finding it easy to stand on its own feet, according to Jack Frost, executive secretary of the year-old Aircraft Parts Manufacturers Association, who declares "we have yet to work through such problems as priorities knots, labor unrest, new taxes, rising costs, government paper work and other complexities of rapid growth.

"Military aircraft production today," Frost continued, "would hardly be out of the plant and tooling stage without the immense expansion of parts makers. Yet from a business standpoint we have only one certainty to rely on, and that is that America must have more planes."

The West Coast association of parts makers is unique in that many dozens of ordinarily competitive operators, frequently with identical equipment, are finding common ground in meeting the problems of emergency expansion. Lasting benefits are resulting from roundtable discussions of their mutual difficulties; unsound trade practices are more readily exposed and some opportunity is afforded for pooling facilities and eventually getting together on comparable wage bases.

While all serve the same six or eight prime contractors, not all are directly competitive. Some mass-produce a single patented item, while other machine or process hundreds of different parts. Many become subcontractors to each other as a result of tool shortages or to avoid the duplication of facilities.

Each has labor classifications differing somewhat from the other, thereby complicating wage discussions; but nearly all have similar difficulties in securing and stocking critical materials, negotiating adjustments of inspection tolerances, insuring, foreseeing subcontracting needs, meeting the varying contract terms of their big customers and guessing the future as determined by war and Washington.

Initially a Mechanic

Initially, the typical West Coast parts subcontractor was a mechanic, with little experience in employee

relations, knowing less about finance and corporate taxes and hardly anything about mass production. These drawbacks permitted only grudging acquiescence from the big plane manufacturers when OPM first pleaded for spreading subcontracting.

But now, with plenty of orders on hand, the parts producers face what are perhaps their greatest problems—whether rising labor costs, from which they are not protected, and income and excess profits taxes will pare net income to a minimum return on the capital investment.

As the producers are well aware that their physical equipment must be paid for in two or four years—not 15—before the inevitable "let-down," they are looking with increased anxiety toward Washington and wondering whether they are sitting on the limb they are sawing so industriously.

Nash-Kelvinator

Production of Hamilton Standard Propellers by Nash-Kelvinator Corp., in a Lansing, Mich., plant, formerly a unit of Reo Motor Car Co., is expected to begin before the first of the year.

Coast Parts Plant Lifts Pay Scale; Wants Reimbursement for the Cost

IN AN EFFORT to make prime contractors and the government conscious of the unfavorable cost position of West Coast aircraft subcontractors, a California parts maker has lifted its wage scale, at the same time asking the plane manufacturers for reimbursement for the higher outlay.

Following closely upon concerted action by large airplane producers toward the achievement of wage stabilization in the Los Angeles area, Aircraft Components, Inc., Van Nuys, Cal., has become the first subcontractor to adopt the same scale, according to Gilbert G. Budwig, president.

Describing the move as "an entirely voluntary step," Budwig said that unskilled beginners at Aircraft Components now receive a starting wage of 60c an hour, with a 5c increase each 30 days for three months, thus duplicating the "75c minimum after three months" plan adopted by the plane manufacturers.

Blanket Raise Given

Also duplicated was the 10c an hour blanket increase for experienced employees, while a 10% boost was extended to all salaried administrative and office workers and members of the firm's planning material control, estimating and engineering departments. Thus every employee of Aircraft Components has received a pay increase through adoption of the parent industry's wage plan.

In this connection, the company has announced that it is going to the aircraft concerns for which contracts are being executed and, in effect, asking to be reimbursed for the higher labor cost. Each



UPSETTING TRADITION in the manufacture of aircraft engines, Packard Motor Car Co. has adapted automotive mass-production methods to finishing of gears for the Rolls-Royce Merlin engine. Above, a battery of automotive type Michels rotary gear shavers are finishing gears for the Merlin, proving, according to company announcement, that "the most rigid of tolerance specifications are no bar to the employment of high-output production methods."

invoice for completed orders is accompanied by another invoice stating the added labor cost due to the new wage scale.

"Our object," declares Budwig, "is to register on our prime contractors and the governmental purchasing agencies the urgent necessity of recognizing the unfavorable payroll and production cost position of the subcontractor."

Can't Make Profit

"Those of us in the subcontracting field cannot execute our contracts at a profit when the wage stabilization plan which the aircraft manufacturers have adopted is in turn adopted by subcontractors in all fairness to their employees."

Meanwhile, with the successive wage increase contracts in individual plants on the West Coast falling far short of his original regional labor stabilization objectives, Sidney Hillman, associate director general of OPM, declared recently that he is "still looking forward to an equitable stabilization to safeguard the rights of labor and to insure continuous production."

Previous efforts initiated by Hillman to draft regional agreements in aircraft similar to those in shipbuilding have so far proved ineffective principally because union leaders have stood firm in opposing the program.

Piper

Piper Aircraft Corp., Lock Haven, Pa., is currently turning out 90 trainers weekly for CPT and expects to double production capacity of the ships on completion soon of present expansion.

Packard Shaves Gears

Literature Available

Briegleb Aircraft Co., Inc., 16005 Buett St., Van Nuys, Cal., has issued a new catalog describing its Utility Glider, model BG-6; its High Performance Sailplane, model BG-7; and its Two-Place Sailplane, model BG-8.

B. F. Goodrich Co., Akron, O., is distributing the following literature: A collection of 24 of its most notable industrial advertisements during 1939 and 1941 published by the mechanical division under the title "Typical Examples of Goodrich Development in Rubber"; the advertisements were prepared by Griswold-Eshleman Co. of Cleveland under the direction of E. E. Van Petten, advertising manager of the mechanical division. A new folder on Goodrich Air-Cell latex foam cushioning material is now available on request.

Hobart Brothers Co., Troy, O., has a new 38-page catalog entitled "Simplified Arc Welding" which describes the complete line of Hobart arc welders and accessories. Design features, manufacturing processes and special applications are photographically highlighted throughout the publication.

L & R Manufacturing Co., 54-50 Clinton St., Newark, N. J., has prepared an initial booklet on L & R industrial cleaning machines and solutions now being used by the Army Air Corps, Navy Bureau of Aeronautics, instrument manufacturers, and transport companies, etc.

Motor Generator Corp., Troy, O., is distributing a pamphlet detailing capacities and features of its latest models of motor generator sets, for electroplating, anodizing and specialized applications.

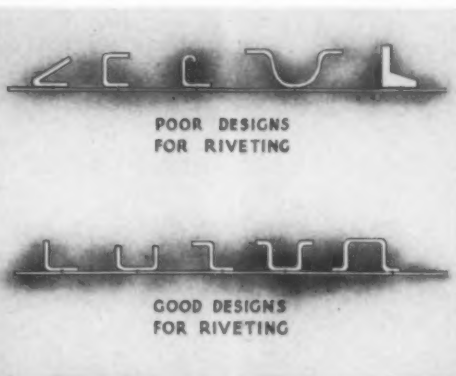
Wheelco Instrument Co., Harrisburg and Peoria Sts., Chicago, Ill., is a new monthly house magazine, is distributing articles discussing instrumentation in the aviation and other manufacturing industries. The publication, "Wheelco Comments," in the current issue, reports a saving of 20% in fuel, labor and reduced spoilage realized by one company following installation of controllers.

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Industry Adopts Pictorial Education Methods



THE AIRCRAFT industry is giving widespread acceptance to pictorial education methods in training its thousands of new, inexperienced workers.

Breakdown drawings are helping to supplant the lack of blueprint reading knowledge. Motion pictures and slide films are offered in the classroom to teach the details of the production tasks.

Above are examples of slide films, synchronized with the sound of an instructor's voice, being shown by Tradefilms Inc. of Los Angeles.

The new and growing Tradefilms company, in cooperation with Lockheed Aircraft Corp., is producing a series of industrial training films to be used as an adjunct to conven-

tional educational methods so that students may see and hear how each production process is best accomplished.

Tradefilms applies slide films to sound, using original photographs (150 in each training reel) taken at aircraft plants. Prints are mounted in strips along with art work, legends and technical drawings, and the whole rephotographed on a 35 mm slide film. A professional announcer adds the script prepared and edited by production experts, and film and voice are synchronized.

Special care is taken to use tool and method illustrations of common use, with supplementary script to cover deviations in the practice of particular companies. Theory and

fundamentals of production objectives accompany the vocal explanation of each illustration.

The right and wrong methods concerning design and operation are stressed throughout.

With the first two of a series of 30-minute training films completed, Shirley Burden and Herbert Dow, founders of Tradefilms, claim that of two average groups of seasoned aircraft workers tested the group shown one of the films before taking a written examination scored 60% higher than the other group which was denied the films.

President Burden is of the opinion that many a potential first-grade mechanic can master a mass of trade principles by sight and hear-

ing which he would be unable to master from studying a textbook, claims the pictorial method to produce a new sense of teamwork among students.

The two completed films are titled *The Engineer's Relation to Production*, which stresses essentials of design with relation to function, weight and speed of manufacture and costs, and *The Engineer's Relation to Assembly*, featuring the flow, elimination of handling, squeeze riveting and spot welding, bench assembly detail, and designs for sub-assembly procedure. Reels taking in almost every production phase are either planned or in production.

Company Sidelights

Beech

Beech Aircraft Corp., Wichita, Kan., has announced completion of two Army Air Corps contracts, including planes of type C-45A personnel transport, similar to the previous type C-45 Beechcrafts delivered in quantity to the Air Corps about a year ago. Both types are adaptations of the commercial model 18S Beechcraft.

Officials report that construction of about \$90,000,000 worth of additional planes for the Air Corps and Navy is proceeding rapidly on a 24-hour-a-day basis. Deliveries will soon begin on others.

Company now has a payroll of over \$200,000 weekly and 5,381 employees. Double this number of employees is expected by spring.

Boeing

Tool sheds, forge and machine shops and an office building have been erected on the 62-acre site of Boeing Aircraft Co.'s Navy flying

boat factory at Renton, Wash., and work is being rushed on the main \$16,000,000 plant. The Austin Co. has the contract for the work.

Cessna

Officials of Cessna Aircraft Co., Wichita, Kan., have announced receipt of an additional contract totaling \$3,273,630 from the Canadian government for an undisclosed number of twin-engined Cessna planes, similar to those already ordered for the RCAF from Cessna.

Chicago Pneumatic

A contract for the manufacture of 500 sets of hydraulic cylinders to be used on Martin B-26 bombers has been placed with Chicago Pneumatic Tool Co., New York City, by Glenn L. Martin Co. Delivery of initial quantities is expected to begin in 45 days.

Chicago Pneumatic recently acquired a new 90,000 sq. ft. plant at Garfield, N. J., expressly for the

manufacture of aircraft hydraulic equipment.

Douglas

Douglas C-35 troop transports, already camouflaged, are now rolling down the assembly lines of Douglas Aircraft Co.'s plant at Santa Monica, Cal. Designed for speed, load capacity and utility, each of these craft will transport 28 parachute troopers and their equipment, in addition to radio operator and two pilots.

Firestone

By fabricating tank parts along its tire production lines and by introducing the using of curing molds for the first time, Firestone Tire & Rubber Co., Akron, O., is eliminating three days of drying, necessary under the previous method of production on bullet-sealing fuel tanks, while at the same time guaranteeing a permanent sealing of all parts of the tanks to withstand the heaviest gun fire.

In addition to output from its main plant, Firestone is increasing output at its Fall River, Mass., and Los Angeles plants.

Harlow

Although continuing production on the PC5-A, a two-place cabin, all metal, basic trainer for export, E. M. Allison, president of Harlow Aircraft Co., Alhambra, Cal., has announced that the company is making its facilities available for all types of aircraft manufacture and details will soon be revealed concerning subassembly activities.

Littelfuse Inc.

Littelfuse Inc., to supplement the manufacture of small electrical fuses and fuse mountings for instruments, aircraft, radio, etc., in its Chicago plant and to better serve west coast customers, has opened a new 21,000 sq. ft. plant at El Monte, Cal., expected to be in full operation by Nov. 1. New manufacturing unit will add 200 employees to Littelfuse's roll.

Under the management of Edward V. Sundt, president, and Thomas M. Blake, secretary-treasurer, the California plant will operate in complete conjunction with the Chicago headquarters of Littelfuse.

X-Ray Photo-Template System Speeds Production



Drawing the Lines Layout



Transferring X-Ray Film



Router Jig Made From a Template

ONE OF the most effective methods of speeding aircraft production since the start of the emergency has been the use of templates—or patterns.

Most firms have found the job of template duplication expensive and tedious, and in recent months, with the production speedup and growth of subsidiary plants has come an even greater demand for template copies.

Research departments within the industry have investigated methods to save time in duplicating templates for the various decentralized operating units.

Several companies turned to photography as the answer, found it a decided improvement over the old manual reproduction method. By using the camera, pictures of the original template are enlarged on metal to actual size, and duplicates made by cutting along the photographic lines.

Now at least two companies have eliminated expensive camera equipment, have substituted the X-ray machine, and claim not only the saving of thousands of dollars but a template duplicating system which North American Aviation Inc. says is "believed superior to any template duplicating system now in use."

North American and Republic Aviation Corp. are leaders in the X-ray template system field. With the aid of X-ray North American claims it will be able to duplicate any master pattern in the shop in an hour's time, that the new method will save, in some cases, several days over the old manual reproduction method. The company adds that since the X-ray method is a direct transfer, absolute accuracy in duplication is obtained, while with photography "a certain amount of shrinkage was involved in the enlarging process, and therefore the method was not foolproof."

North American claims the X-ray process to be a simple one. (Steps in the process are illustrated in the accompanying pictures taken at North American's Inglewood plant.)

"On metal sheets that have been previously treated with fluorescent lacquer, the draftsman scribes the template design. The effect of the

lacquer is destroyed where he draws. He then sends the layout to the X-ray photo-template department, where it is placed under the X-ray. This causes the lacquered surface to glow. Since the lacquer's effect is destroyed where he has scribed, those lines remain dark. Then any practical surface coated on one side with film is placed next to the original template design, using a vacuum pressure arrangement to hold it firmly. When the afterglow of the scribed template reacts on the film, an opaque negative results. After the transfer process has been completed, the negative developed by ordinary photographic means, and the finished product is ready to be cut trimmed, and sent to the shop for production use. The system will produce either positive or negative prints."

North American reports that in addition to the low operating expenditure, it is equipping its laboratory for about \$6000, and that the low cost should make it possible for the small manufacturer to install the same setup. North American believes that the initial cost will be returned in savings within three months.

Vultee Vanguard

Produced for China

The newest version of the Vultee Vanguard pursuit is now being manufactured in quantity for China, according to Vultee Aircraft Inc., Downey, Cal. A number of these fighters, designated the P-66, already have been completed and are ready for shipment.

The Vanguard has been on order for the RAF, but due to the desperate need of China for fast, high-flying pursuits, the British have agreed to release the plane to China.

The Vanguard is a low-wing monoplane powered by a single Pratt & Whitney 1200-hp. engine. Its span is 36 ft. and its length 28 ft.; gross weight approximately 6000 lbs. Performance figures are restricted information, but the ship is classed at above 350 mph.



Template Die Forms Aircraft Parts

OPM Figures

Deliveries By U. S. Military Aircraft Manufacturers

JANUARY	1,036;	Daily Average	33.4
FEBRUARY	972;	" "	34.7
MARCH	1,216;	" "	39.2
APRIL	1,389;	" "	46.3
MAY	1,334;	" "	44.8
JUNE	1,476;	" "	49.2
JULY	1,460;	" "	47.0
AUGUST	1,854;	" "	59.8
SEPTEMBER	1,914;	" "	63.8

9-Month Total 12,651

Monthly Average for 9 Months 1,406

Not next year, *but now!*



GOODYEAR'S contribution to the nation's great aviation program is no mere blueprint of things to come. It is a mass-production reality—*today!*

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Our production of airplane wheels, brakes, tires and other accessories is zooming to new heights. Within its specialized field, Goodyear is now the nation's leading supplier of airplane parts and accessories.

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TUBES, WHEELS AND BRAKES



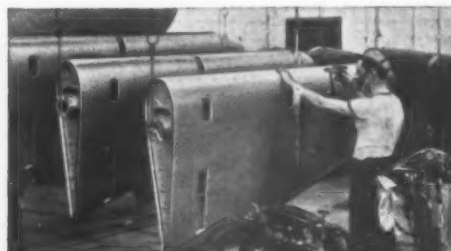
ENGINEERING — a corner of the drafting rooms, Goodyear Aircraft Corporation.



BRAKES—machining Goodyear Hydraulic Disc Brake assemblies, a job that calls for highest precision.



BULLET-PUNCTURE-SEALING TANKS—now in large-scale production for various types of military aircraft.



TAILS—finishing tail assemblies, Goodyear-built for Martin B-26 bombers.

Five Year Building Program Shows Results



FOR THE last five years, plant expansion has been a major occupation at Consolidated Aircraft Corp., and has been consistently carried on in the face of increasing business without interference with plant operations. This five-year program will enable the company to show early in 1942, nearly 6,500,000 sq. ft. of aircraft manufacturing buildings devoted to the production of completed planes, conceived and designed by Consolidated.

Illustration at top shows Consolidated's home plant of 1,548,037 sq. ft. at San Diego. Photo was taken early this year. Second illustration is a drawing of the company's 1,554,330 sq. ft. parts plant now being built about one and one-third miles north of the home plant at San Diego. When this factory is finished next month, Consolidated will have 3,102,367 sq. ft., nearly 75 acres of manufacturing buildings, producing aircraft in San Diego.

The new assembly plant at Ft. Worth, Tex., scheduled for completion this year, is being built by the Corps of Engineers to Consolidated's specifications. The Ft. Worth unit will be operated by the company for assembly of B-24 bombers. Main assembly building will cover a ground area of 1,280,000 sq. ft., almost 30 acres.

Assembly units for the B-24s will be manufactured by Ford Motor Co. at Ypsilanti, Mich., and shipped by rail and truck to Consolidated's Ft. Worth factory.

A. M. Hall, assistant to the manager, will be in charge of the Texas factory.

At Tulsa, Okla., another plant of identical design, also for the assembly of Consolidated B-24 bombers, to be operated by Douglas Aircraft Co., is being constructed by the government and will be completed before Jan. 1.

There have been times during Consolidated's five-year building program when it was necessary to resort to strenuous expedients, even the temporary use of tents, to insure even flow of production while awaiting for new plant area.

Aero Deliveries Under Lease-Lend Only Small Part of Total Exports

SPECULATION in press circles over the apparent paucity of defense materials being sent to the British following the President's report that \$6,016,145 worth of aeronautical equipment had been sent to England under Lease-Lend authority up to Aug. 31 has been attributed to misinterpretation of the figures presented.

The President's statement, covering the first six months operation of Lease-Lend, did not make clear that the vast majority of deliveries now being made to Britain are those covered by cash payments under agreements made before the Lease-Lend program came into operation.

This fact has been emphasized by Col. John H. Jouett, president of the Aeronautical Chamber of Com-

merce, who points out that U. S. aircraft manufacturers during the first seven months of this year delivered to the British more than \$284,000,000 worth of planes, engines and other aeronautical equipment.

Sees Misconception

"There appears to be a misconception in the public mind," said Col. Jouett, "that the only equipment going abroad is labelled Lease-Lend. Such conditions may prevail at some future date but not for some time to come.

"Our manufacturers have original contracts with the British which they have been filling on schedule and often ahead of schedule. Some of these contracts run through 1943. Production and shipments on these

British orders at present constitute more than 60% of the output of some of our plants, with the approval of our government. They should not be confused with Lease-Lend deliveries.

"Out of the \$284,000,000 worth of aeronautical shipments for Britain, the plane, engine and propeller deliveries accounted for more than \$240,000,000.

Mostly Combat Planes

"While actual figures on numbers of planes and categories cannot be given, for every trainer sent to the British this year, three combat planes have been delivered.

"All in all, American aircraft manufacturers in the first seven months of 1941 sent the British nearly twice as many combat planes as the British lost in defending the British Isles, according to their own figures, during the entire year of 1940. At the same time, American manufacturers have shipped tens

of millions of dollars worth of extra engines.

"Further, over and above the combat planes actually exported, there usually are several hundred planes consigned to Britain and waiting to be shipped or flown away from the plants or other points of departure. Deliveries of combat planes are steadily increasing."

New P & W Addition

Operations began late in September in the latest addition to the East Hartford, Conn., plants of Pratt & Whitney Aircraft Division of United Aircraft Corp. The addition adds 500,000 sq. ft. of floor space to the existing 1,500,000 sq. ft. When fully equipped and in full operation in about 45 days it will contribute to the P & W present goal of production of 2,000,000 horsepower monthly. At the present, output is running about 1,700,000 horsepower monthly.



TOOLS

"Give us the tools . . ."—Winston Churchill

Give us a medium bomber, with heavy striking power . . . a heavily armed bomber, that can serve as a twin-engine fighter . . . a bomber that can travel, too, on missions of long-range reconnaissance. These R. A. F. tactical requirements are met by the new Martin "Baltimore" Bombers—now being delivered in numbers to Britain. The Glenn L. Martin Company, Baltimore, Maryland, U. S. A.

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Builders of Dependable



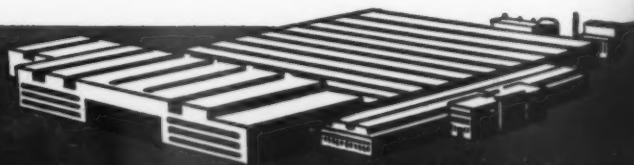
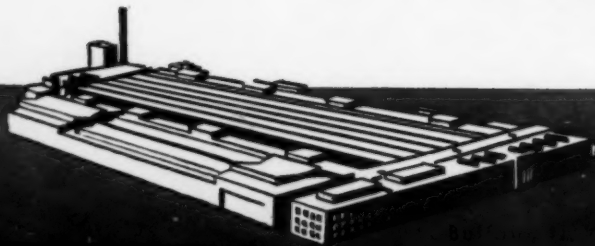
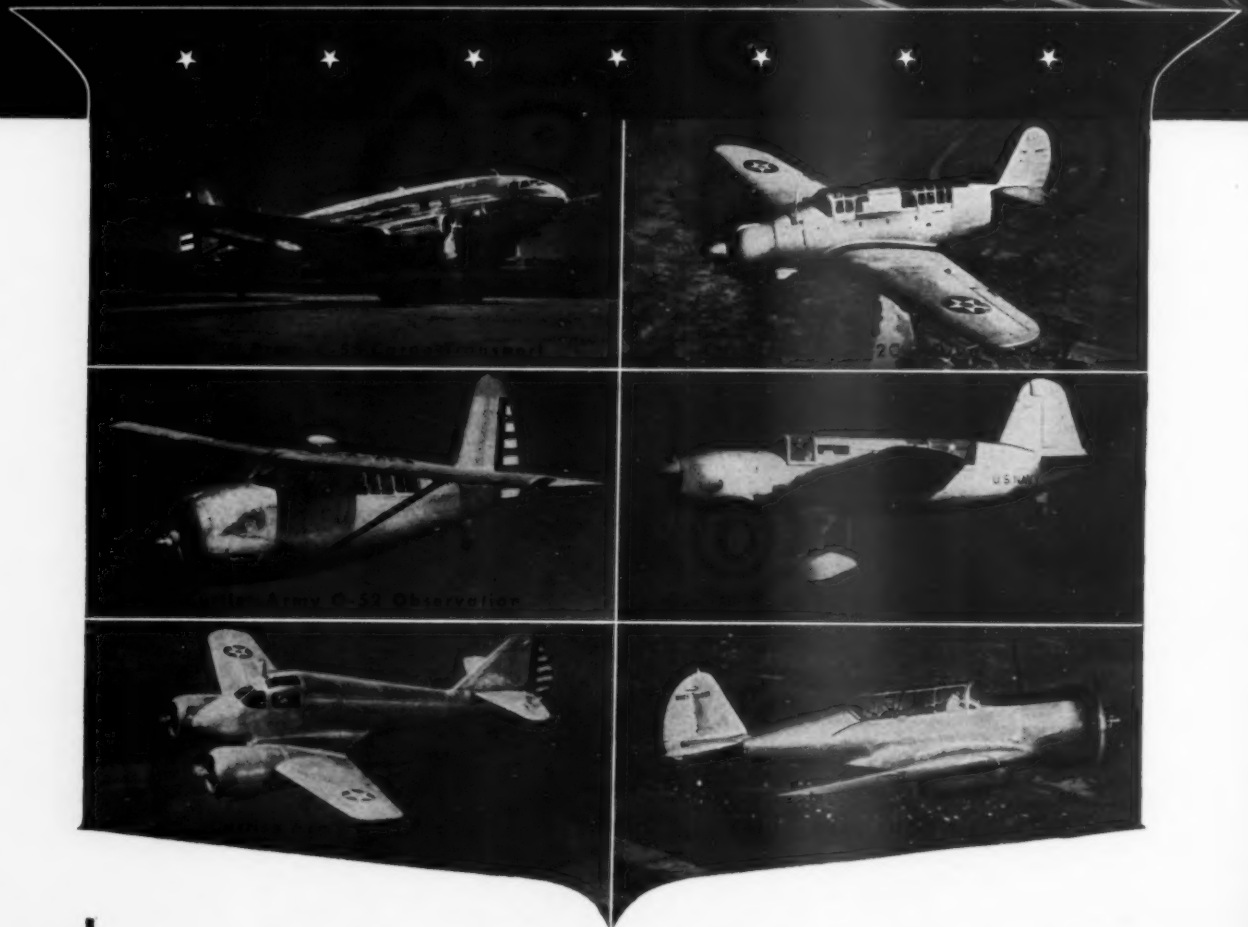
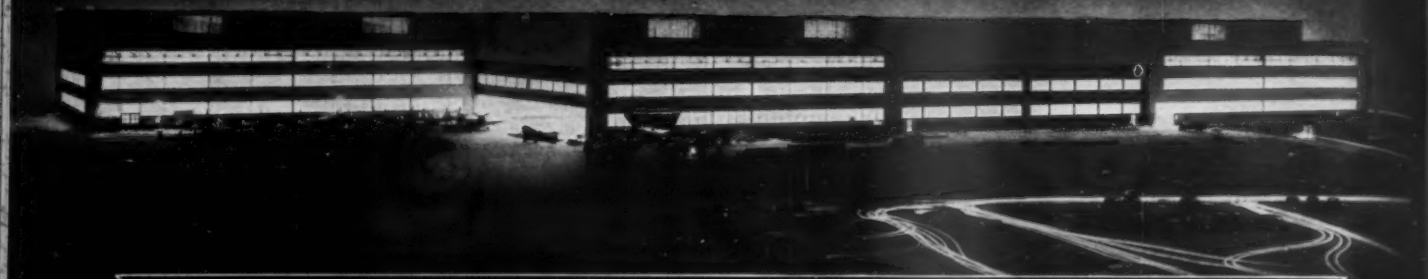
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Answers the Nation's Defense Call





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Pledged to All-Out Production

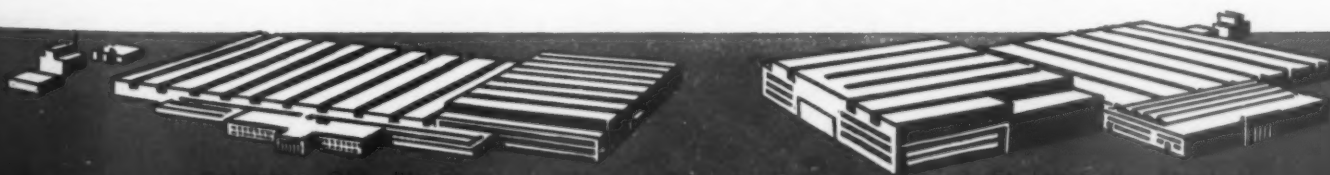
THE Aeroplane Division of Curtiss-Wright Corporation has four great plants, totaling over 5,000,000 square feet of floor area, devoted to the production of fighting aircraft for our Defense Forces.

In answering the Nation's Defense call, Curtiss-Wright has pledged itself to all-out production—management and personnel working day and night to preserve the traditions of democracy.

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Bookshelf

WAR IN THE AIR: Fighting Planes and Pilots in Action, by John B. Walker; Random House, 20 E. 57th St., New York, N. Y.; 60 illustrations by Barry York, of which 37 are in color; 74 pp.; \$1.

In this book, a successor to *Fighting Planes of the World* which Walker, assistant to the president of United Air Lines, wrote last year, the reader finds not only accurate descriptions and illustrations of all the new planes on which data have been released, but also of those planes which are making air history today.

Walker has given a vivid and detailed account of the action engaged in by the flyers who man these planes—dive-bombing, strafing, reconnaissance, dog-fighting, etc.—providing a picture of pilots, bombardiers, gunners, and radio-men in action.

FLYING FLEETS: A Graphic History of U. S. Naval Aviation, by S. Paul Johnston; Duell Sloan and Pearce Inc., 270 Madison Ave., New York, N. Y.; 219 photographs; 188 pp.; \$3.

From "Old Ironsides" down to the latest high-speed turbo electric cruiser, the history of U. S. surface Navy covers some 160 years. Only 30 years have elapsed, however, since the experimental flights of the Navy's first airplanes, but in those three decades our flying fleets have developed a tradition that matches that of our ocean going fleets.

Between the crude and uncertain beginnings of 30 years ago and the efficient operations of today lies the story

Personnel on the Move

STANLEY BRACKEN has been appointed general manager of manufacture of Western Electric Co. effective Oct. 1. . . . **LT. Eugene F. Zimmerman**, U.S.N.R., of the aviation department, Shell Oil Co. Inc., went on active duty with the Navy Dept., Oct. 1. He is stationed in Washington with the new production section of the Bureau of Aeronautics. . . . **W. R. Williamson**, for 16 years a member of the accounting firm of Ernst & Ernst, Kansas City, has been appointed treasurer of Aircraft Accessories Corp. of Missouri. . . . **Charles L. Nielson**, formerly of Scovell, Willington & Co., certified public accountants and engineers, New York City, has been appointed assistant controller of Fleetwings Inc., Bristol, Pa. In his new position Nielson will assist I. S. Wilson, treasurer and controller. . . . Directors of Macwhyte Wire Rope Co., Kenosha, Wis., recently voted General Supt. **Robert B. Whyte** to the office of vice president in charge of operations. Other officers of the Macwhyte company are: **George S. Whyte**, chairman; **Jessel S. Whyte**, president and general

manager; **H. E. Sawyer**, vice president and treasurer; **Howard Gay**, secretary; **M. A. Buntrock**, assistant secretary and assistant treasurer.

The Glenn L. Martin Co. has announced appointment of four executives for the Glenn L. Martin-Nebraska Co., the new wholly-owned subsidiary which will operate the new government-built aircraft assembly plant at Omaha, Neb. **Herman G. Klemm**, executive engineer of the Martin company, was named chief engineer of the western company; **William O. MacArthur**, formerly of the firm of Joseph Proggatt Co., certified public accountants, Boston, is the comptroller; **Harry M. Shealey**, assistant factory superintendent in charge of the Canton Division of the Martin company, is factory superintendent of the new company; and **Carl B. Hamlin**, chief inspector at Middle River, Md., becomes chief inspector at Omaha. These appointments following the naming of **Lincoln R. Scafe**, former General Motors executive, as vice-president and general manager of the Martin-Nebraska company.

related in this book—a story told largely in pictures.

Flying Fleets records the early struggles between those who foresaw the effect of aviation upon our Navy, and those who could see little use for flimsy contraptions like that which Glenn Curtiss audaciously landed alongside the Pennsylvania, and Ely flew from the deck of the Birmingham.

In a sense, Johnston's book is a companion volume to his *Horizons Unlimited*. Johnston is at present consultant to the National Advisory Committee for Aeronautics.

BOMBS AND BOMBING, by Willy Ley; Modern Age Books Inc., 432 4th Ave., New York, N. Y.; 124 pp.; \$1.25.

Carrying the subtitle "What Every Civilian Should Know," this book on air attack and defense against it is full of lessons learned in the present war. Full information about the air weapons and technique of modern warfare is given.

Accompanied by line drawings and diagrams, Mr. Ley, new weapons editor of PM, describes the several types and uses of bomb carriers and bombs. He describes the methods by laying bombs by level flight and by dive, the principle of the bombsight, the hardships of the bombardier.

He also analyzes the latest methods of defense—interceptor planes, AA guns, balloon barrages, types of shelters, blackouts, camouflage, and civilian organization.

TALLY-HO! Yankee in a Spitfire, by Arthur Gerald Donahue, Pilot Officer, RAF; The Macmillan Co., 68 5th Ave., New York, N. Y.; 190 pp.; \$2.50.

This is the personal story of the Minnesota farm boy who was the first American to see combat with the RAF in the summer of 1940; bailed out of his blazing Spitfire on Aug. 12; rejoined his interceptor squadron six weeks later; was stationed in an eastern suburb of London during the winter; had his first fight written up by Quentin Reynolds; came home for a few days' leave in March of 1941; is now back in England taking up where he left off.

Whereas most other books about the RAF have been written by reporters, this is one of the first from the pen of a pilot.

Coast Library Opens

Through a gift of \$10,000 from the Paul Kollsman Fund, one of the largest collections of authoritative material on aeronautics in the west was made available to the aviation industry Oct. 1 when the Institute of the Aeronautical Sciences opened the Pacific Aeronautical Library at Room 209, 6715 Hollywood Blvd., Hollywood.

Over 1,000 volumes were made available immediately, but in addition the library will be able to secure any aeronautical book on loan from the 5,000 volumes in the Paul Kollsman Library in New York and 180,000 engineering books in the Engineering Society's library in New York.

Calendar

OCT. 12-15—American Society of Mechanical Engineers, Fall Meeting, Louisville, Ky.

OCT. 20—Dedication of Consolidated Aircraft Corp's Parts Plant, San Diego, Cal.

OCT. 20—Air Line Dispatchers Association, 3d Annual Convention, Chicago, Ill.

OCT. 20-24—American Welding Society Annual Meeting, Bellevue-Stratford Hotel, Philadelphia, Pa.

OCT. 20-24—23d National Metal Congress and Exposition, Convention Hall and Commercial Museum, Philadelphia, Pa.

OCT. 21—Aviation Day at Bridgeport, Conn., with Inauguration of Service by American Airlines.

OCT. 30-31—Conference on Airport Construction, Operation and Maintenance, Sponsored by Illinois Institute of Technology, Palmer House, Chicago, Ill.

OCT. 30-NOV. 1—Society of Automotive Engineers, National Aircraft Production Meeting, Biltmore Hotel, Los Angeles, Cal.

OCT. 31-NOV. 2—Aero Medical Association, 13th Annual Convention, Statler Hotel, Boston, Mass.

NOV. 5-6—West Coast Transportation and Maintenance Meeting, Sponsored by the Society of Automotive Engineers, Fairmont Hotel, San Francisco, Cal.

NOV. 7-11—Defense Exposition, Kansas City, Mo.

NOV. 10-12—Engineering and Maintenance Committee Meeting, Air Transport Association, Cleveland, O.

NOV. 11—Junior Chamber of Commerce Air Show and Dedication of Braniff Airways' Operations and Maintenance Base at Love Field, Dallas, Tex.

NOV. 13-14—National Transportation and Maintenance Meeting, Sponsored by the Society of Automotive Engineers, Hotel Statler, Cleveland, Ohio.

NOV. 28-DEC. 7—International Aviation Show and Light Plane Exhibit, Convention Hall; Headquarters, Detroit Leland Hotel, Detroit, Mich.

DEC. 1—Air Line Mechanics Association, Annual Convention, Del Prado Hotel, Chicago, Ill.

DEC. 1-2—National Aviation Training Association, Annual Convention, Kansas City, Mo.

DEC. 1-5—American Society of Mechanical Engineers, Annual Meeting, Hotel Astor, New York, N. Y.

DEC. 4—Dedication of New Factory of Curtiss-Wright Corp's Airplane Division, Port Columbus, Columbus, O.

JAN. 9-11—All American Air Maneuvers, Municipal Airport, Miami, Fla.

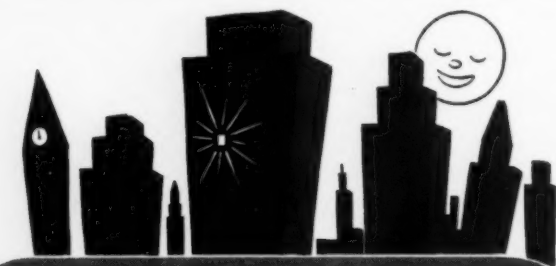
JAN. 10-11—Dedication of Bomber Assembly Plant to be Operated by North American Aviation Inc. at Kansas City, Kan.

JAN. 12-16—Annual Meeting and Engineering Display, Society of Automotive Engineers, Book Cadillac Hotel, Detroit, Mich.

APR. 23-25—5th Annual Southwest Aviation Conference, Hotel Muehlebach, Kansas City, Mo.

APR. 23-25—Women's National Aeronautical Association, Annual Convention, Hotel Phillips, Kansas City, Mo.

MAY 1-2—3d New England Aviation Conference, Providence, R. I.



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Airport Certification in Federal Control Plans

(Continued from page 1)

adoption by the Interdepartmental Air Traffic Control Board—on which the Army, Navy, CAA and CAB are represented. Although lacking in executive authority, the Board is considered a highly significant body since its recommendations often reflect the official attitude of the agencies mentioned.

Complete federal control of aviation, it is claimed, can be accomplished through existing powers under the Civil Aeronautics Act—powers which heretofore have not been exercised. There is little doubt in official Washington of the constitutionality of such action, regardless of the opinion on enforcing that authority.

It is expected that whatever final form the control plan takes, it will be closely integrated with the civilian air defense program, now definitely set, and on which an announcement from Mayor La Guardia's Office of Civilian Defense is due shortly.

Point to Act

To the question raised in Washington as to whether special legislation would be necessary to accomplish the certification of airports, CAB officials point to Section 806 of the Civil Aeronautics Act, which states:

"The Authority is empowered to inspect, classify, and rate any air navigation facility available for the use of civil aircraft of the United States, as to its suitability for such use. The Authority is empowered to issue a certificate for any air navigation facility."

Identifying airports as air navigation facilities, the CAB presumably has the power to issue air rating certificates to airports.

This does not mean, it is pointed out, that airports could not exist without such ratings. But the effect would be the same.

Without certification airports could not afford to exist, if a ruling, now being considered, is passed prohibiting certificated pilots and planes from using uncertificated airports.

Would Tie Knot

Thus, the certification of airports would tie the knot on complete federal control of civil aviation, and would be accomplished without special legislation.

One of the most important factors in certificating airports, from the government's standpoint, is that it would give the government control over all airport management and personnel, and thus place it in a position to act directly against possible sabotage.

The significance of federal certification, will depend, of course, on the future regulations to which certificated pilots, planes—and possibly airports—will be compelled to conform.

Some opposition to the contemplated action can be expected involving in particular, the issue of state's rights.

At the recent annual meeting of the National Association of State Aviation Officials at Providence, R. I., state aviation officials went on

record in objection to the federal government's further encroachment on the sovereign rights of the states to control airspace. But when asked if a resolution to that effect was intended as an adverse report on certification of pilots and planes, the officials stated that it was not.

The fact that the state aviation officials did not go on record against such regulations, and that no opposition was offered at the recent CAB hearing on certification of pilots and planes, is considered significant by Washington officials.

At the Providence meeting, however, it was brought out that some assurance of protection of state's rights after the emergency was strongly desired.

To this CAB officials are inclined to answer that federal control of the type contemplated does not

"and we intend to advise our representatives in the Congress to resist any further invasion of those rights in the appropriation of any air space above our state without consent."

Some officials in Washington claim that control of the type contemplated would not change the status of the average certificated pilot although it is known that a checkup on such pilots and more stringent provisions for certification are being considered.

Oswald Ryan, member of the CAB, revealed at the Providence meeting: "It has been suggested that a comprehensive survey be made of the registered owners of all aircraft in order to determine whether there may be among them individuals who are enemies of the United States."

First public declaration that seri-

governing the control of all non-scheduled civil flying by requiring individual flight authorization from an airport manager or his authorized representative, similar to Air Corps departure and arrival reports.

"3. The finger-printing of all licensed airmen and the investigation of each plane owner and pilot by a law enforcement agency be completed to determine nationality, place of birth, criminal record (if any), etc."

Although IATCB "realizes the importance of a large civil aviation reserve of planes, pilots and aircraft factories to the national defense . . . conditions change rapidly from day to day, and the civil pilot and plane owner must be prepared to adopt himself to new regulations and restrictions should they become necessary," Maj. McMullen warned.

Not Only Means

Definite assurance, however, that "regulations, restrictions and more regulations" are not the only means by which the government is attempting to cope with air traffic control problems was given by Maj. McMullen.

During the past five years, he suggested, "at least one department, the airport division of the CAA, has been preparing long range, nation-wide airport and airway development plans, and airport layout plans of all types. In preparing these plans, the safe and efficient flow of air traffic has been a deciding factor."

One important possible means of relieving the restrictions imposed on airports and private flying within the limits of civil airways in the vicinity of radio range stations and control airports, while at the same time increasing safety of through traffic, is currently being studied by the CAA.

The plan would provide for the establishment of a "range approach channel," four miles wide (two miles on each side of the center line of the oncourse range signal) extending for a distance of 15 miles from the radio range station. This in effect would narrow the airways 20 miles to four miles, along the 15 mile section.

Would Be Permitted

Training activities and acrobatics, Maj. McMullen explained, would then be permitted within the present limits of the airways, outside the four mile range approach channel. Acrobatics, however, would be barred from the four mile channel and from the three mile airport control zone. Further, "all flight maneuvers outside the range approach channel, but within a 10 mile radius from the center of the control airport—unless on an approved flight plan—shall be performed in a manner and over an area prescribed by the Regional CAA Manager after joint consultation with all aviation interests concerned, and after approval by the Administrator of Civil Aeronautics. The procedure contemplates no changes in existing regulations for flight plan procedure or flight within control zones."

Basic Elements of Airport Policy

Three basic factors of airport policy, which have been tentatively agreed to by Army, Navy and CAA, were outlined at the NASAO meeting in Providence, R. I., by Charles B. Donaldson, CAA acting director of airports. These elements, which will have a direct bearing upon the future development and operation of civil airports, are:

"1. That no new airport shall be established closer than six miles from any existing airport, or on, or within two miles adjacent to the letdown legs of a radio range or instrument landing beam, if within 10 miles of a radio range station.

"2. That the municipal or civil airports which have been taken over for flight training activities of the Army and Navy and occupied by military units will not be used for civil aircraft operations.

"3. That municipal or civil airports which have been occupied by the combat or tactical units of the Air Corps may be used jointly by scheduled air carrier aircraft, but not by non-scheduled aircraft."

In explanation of Point 3, it should be pointed out that combat aircraft, as well as air carrier aircraft, are equipped with two-way radio—thus such traffic can be regulated by radio airport traffic control. It is likely, Donaldson said, that non-air carrier planes equipped with two-way radio would also be permitted to use these fields.

mean the death of state's rights, but that states will be called upon to assist the government in the undertaking, and that state officials will have definite responsibilities.

That more extensive government control of civil aviation is vital to defense is seldom questioned in official Washington, especially in military circles.

State aviation leaders are in full support of any necessary measures to prevent sabotage; in fact, state air defense units in several states provide for regulation similar to that being discussed in Washington. But some states definitely fear complete federal control of the air space.

"We, in Oregon, contend that the air space above our state belongs to us in the same manner as the earth below it," asserts Leo G. Devaney, Director of the Oregon State Board of Aeronautics, "and that its control should remain vested in the state unless otherwise granted to the Federal Government at its request.

"We believe that inherent sovereign rights of the several states are being invaded by the Civil Aeronautics Board," Devaney adds,

ous consideration is being given to the certification of all airports, in addition to pilots and planes, has been given by Maj. A. B. McMullen, formerly head of the CAA's airport division and now on duty with the Army Air Corps.

Speaking at the NASAO meeting, Maj. McMullen revealed that as a step toward more rigid control of non-scheduled civil flying, the Interdepartmental Air Traffic Control Board, of which he is chairman, recommended three measures as the most effective means of accomplishing this objective.

These recommendations are that:

"1. Within the limitations of constitutional authority all airports and landing areas be required to obtain a certificate of public convenience and necessity from the Civil Aeronautics Authority as a condition precedent to their operations, and that in issuing airport certificates, particular attention be given to the qualifications of airport management personnel.

"2. The Civil Aeronautics Board prepare regulations to be placed in effect, when necessary, by the Civil Aeronautics Administration

American Aviation

The Independent Voice of American Aeronautics

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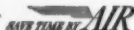
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Washington, D. C.

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Fortnightly Review

(Continued from page 1)

direction finders and the Board's approval of the use of direction finders for air carrier operation.

4. Last but certainly the most important under present world conditions, is the apparent necessity for more rigid control of all civil aviation for the duration of the emergency.

If state's rights are to be considered in the ultimate government program for the development and regulation of aviation, it would appear necessary to distinguish clearly between the national defense requirements and the post-war developmental period. Certainly from the single standpoint of national defense, federalization is vital without any contrary arguments. We assume that it is generally accepted throughout aviation that civil flying must either be grounded or carried on under war-time supervision.

In this regard Mr. Oswald Ryan, CAB member, sounded the keynote when he addressed the National Association of State Aviation Officials in Providence. "The potential power of the airplane as an instrument of sabotage, espionage and similar subversive activities by enemies of the U. S. presents a problem . . . The 40-horsepower Cub in the hands of a skillful pilot can become as truly a menace to our national defense plants and other defense facilities as the multi-engined bomber can be destructive on a large scale."

As a matter of fact, some of the states have anticipated a clamping down during the emergency. Fingerprinting and photographing of pilots has begun in a few areas. Identity of traffic in and out of all airports will be closely checked. Other emergency measures, all to the good, are beginning to take shape. It would appear obvious that no control of civil aviation for purposes of national defense, however, could possibly be genuinely effective unless they are applied uniformly to the 48 states. A federalized control for the emergency is an obvious necessity.

On the other hand, civil aviation should be fully appraised of the significance of federalization for the post-war period. If the control is continued, it means the end of independence by a few states who felt they should have something to say about

the use of their airspace by their own citizens. It means the end of all unlicensed airplanes. It means that state regulation becomes merged with federal. But it should be noted that 35 states have now adopted federal regulatory laws as their own, so the new jurisdiction (outside of extending federalization of airspace to the nation instead of confining it to civil airways) will mean very little new.

If it is accepted that federalization is required in the interests of national defense, and there have appeared no objectors to this point, the importance of the Board's step lies in post-war years. George B. Logan, general counsel for the state aviation officials, pointed out in Providence that the development of civil aviation is of the utmost importance to the safety and future of this country and that the states must continue to have an important part of this development.

"The development of military aviation alone is not sufficient," he pointed out. "We cannot rely forever on airplanes owned and manned by the Army and Navy for our complete and future salvation. We must rely upon the fullest possible use of this new and unequalled method of transportation—a method of transportation which transcends all barriers, whether rivers, oceans, or steel and concrete lines. It is purely a question of transportation and not a question of fire-power or bomb-carrying capacity."

"From the standpoint of transportation, the future of this country requires not that we have thousands of military planes, but that we have millions of civil planes and millions of civilians who know how to use them. To attain this requires the concerted effort of every agency in the U. S. which knows anything at all about aviation. . . . Above all things, the attainment of this end does not call for the rebuff, cold shoulder, and curt dismissal of the 48 states."

The federal government needs the cooperation of the states. As a matter of fact, the federal government cannot alone do the whole job of developing, encouraging and regulating of civil aviation. The states and their rights must be fully recognized.

Jack Morris and CPTP

APPOINTMENT of John P. (Jack) Morris as director of the Civilian Pilot Training Program is refreshing news. Having been assistant director for some months, and in the field before that, he assumes his new job with full knowledge of his problems and his organization. His record is good, his performance is proven, and his feet are solidly on the ground. Just as important, he holds the confidence of a large portion of civil aviation's fraternity.

Mr. Morris steps in at a difficult time. The orders of a month ago cutting a third of last season's schools out of the program has created all the uproars and pressure that are always attendant to any slicing of the public funds. We endeavored to point out long ago that skyrocketing the program would have its eventual boomerang with many operators "holding the bag" in the form of airplanes not paid for. At present outlook, no few of them face financial ruin. But this is a problem Morris inherited, not originated, and if anyone can stabilize CPTP, he should be the man.

State Co-ordinator Needed

ONE OF THE resolutions adopted by the National Association of State Aviation Officials at its annual meeting in Providence calls for the re-establishment by the Civil Aeronautics Administration of a State Co-ordinator with full power to represent that federal agency. To our way of thinking this is an important post which should be filled immediately from the ranks of state aviation officials, either on leave from a state position or as a permanent appointment. Such men as A. H. Near, chairman of the Kentucky Aeronautics Commission, would be admirably suited to the job. State-federal relationships were never more important than right now. A capable man who knows state problems is required. The CAA should take immediate steps to re-establish the position but should consult with the state aviation officials before rushing into an appointment.

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Pro, Con and Otherwise

Two Rules

Oct. 7, 1941.

TO THE EDITOR:

Your Oct. 1, 1941 issue, page 31, relating to "Inconsistencies" as expressed by "A.E.D." interests me very much.

It appears that "A.E.D." is misinformed and, as a result of his letter, many of your readers may also be misinformed. It is for this reason that I write you.

It so happens that I have studied the 85 hour rule and a considerable amount of the back history that brought this rule into being. The 85 hour rule was not adopted because it was a safety rule but because it was a labor rule and adopted by the Labor Board. Safety rules come under the jurisdiction of the Civil Aeronautics Board and not the Labor Board.

Safety rules are to be found in the Civil Air Regulations, issued as required, under Title VI—Civil Aeronautics Safety Regulation, Section 601 to 610 inclusive. In these safety rules you will find that no mention is made of the 85 hour rule but to the contrary it authorizes certificated pilots to fly more than the Labor rule. I do not believe that Congress intended conflicting acts, rules or regulations.

The Civil Aeronautics Act of 1938, Title IV, Air Carrier Economic Regulation, Section 401 (L), does pertain to the 85 hour rule as a compliance with Labor legislation. You will note that under this Title IV, the labor rule is one of economic rather than safety.

It is unfortunate that so many in the airline industry and those in the government service having to do with airlines, do not quite understand that there are two separate rules—one which has to do with Safety and the other which has to do with Labor.

AN AIRLINE OFFICIAL.

British Pilots

TO THE EDITOR:

With reference to the indignant letter from A.E.D. on page 31 of your Oct. 1 issue, I would like to state that the information given by the passenger was incorrect.

This corporation as you know, took over Imperial Airways and British Airways and quite a number of the pilots went to the Air Force on active service.

Capt. Root-Taylor was killed while bombing Berlin and Capt. Lynch-Blosse is a prisoner in Germany after taking part in many raids over Germany.

Capt. Long is a prisoner in Germany after making a forced landing at sea in a flying boat, and Capt. Gordon Store took part in the Norway show and is still in the Air Force.

In addition to this, a number of our men, as you have often published, have been working on the Air Transport Auxiliary, and also the Atlantic Ferry service. Some of these were already in the Air Force before they went on that work.

It is, of course, true that quite a number, even though they might have been on the Air Force Re-

serve, remained with us in order to keep our Empire communications open.

Very truly yours,

P. E. BEWSHEA,
MANAGER, NEW YORK CITY,
BRITISH OVERSEAS AIRWAYS CORP.
(U. S. airline pilot A.E.D. in the Oct. 1 issue stated: "Recently I had a member of the British Ministry of Aircraft Production as a passenger and in conversation with him, I inquired as to the records of British Airline Pilots who had entered the fighting forces of their country. I was assured that almost without exception, none of the British Airline Pilots had entered the Service and that as a matter of fact the British Airlines employ more men now than they did at the opening of hostilities"—The Editors.)

Refunded Tips

Oct. 1, 1941.

TO THE EDITOR:

On my return today from a trip to the sovereign state of Louisiana I found on my desk a package from Marshall Field & Co., Chicago.

You will recall that last July I addressed to you a plaint that airlines were plucking coins from the pockets of their patrons under the guise of service rendered by men in red caps. At about the same time I wrote Mr. Bob Johnson, the erudite public relations representative of United Air Lines at Chicago, voicing similar sentiments.

The aforesaid package yielded, upon opening, two shirts of pristine whiteness. A note enclosed said, "these are those two shirts the airport porters took away from you on your trip over the line! Sincerely, Bob Johnson."

This is highly embarrassing. I find myself in the same position as the man who filed suit against his wife for divorce and then had to file on his own cross-complaint to make it legal.

The returns from American, TWA and Eastern are not in yet.

Sincerely,

DEVON FRANCIS,
PRESIDENT,
AVIATION WRITERS ASSOCIATION.

P.S.—In compensating me in shirts for the money I paid out in tips to porters at United Air Lines stops, Mr. Johnson overpaid me in the sum of \$2.85.

(In the July 15 issue, tipster Francis wrote of "a small army of men with red caps who seize upon one's luggage at the doorways to airline terminal buildings, carrying the same a distance of from 10 to 50 feet, and thereupon stand hitched until they are dispatched by the deposit of a coin in their palms. . . . I should be glad to have an extra quarter, or even half a dollar added to the price of my airline ticket, if only I can be spared the specter of the outstretched palm of the men in the red caps"—The Editors.)

Jobbers' Bobble

Box 707, Vernon P. O.
Los Angeles, Cal.
Sept. 23, 1941.

TO THE EDITOR:

At a meeting of the Service Tools Institute recently held in Chicago, it became very apparent from ex-



perience of various tool manufacturers that they were having a great deal of trouble getting the Affidavit Form No. PD-25-C filled out by their jobbers.

Most manufacturers have written numerous letters to jobbers explaining the Defense Supplies Rating Plan, but it seems that jobbers in general have not yet grasped the purpose and significance of this plan. The purpose of the plan is to insure at least a certain amount of supplies of tools and similar items to the jobbing trade. It is distinctly to the jobber's advantage to cooperate in every way with his manufacturer's suppliers regarding the A-10 plan.

The Defense Supplies Rating Plan was formulated in order to establish a priority method which would apply to manufacturers of staple defense supplies. It applies particularly to those items that must be manufactured before they are ordered as opposed to many war supplies—like planes, guns, etc.—which are ordered first and manufactured afterward. Tools must be available at all times to the mechanic who needs them. They are termed "off-the-shelf" merchandise.

It is necessary to have priorities to buy steel and supplies. The tool factories cannot buy steel to make tools unless they have priorities. It is the government's desire that tools be kept available through the channels that are doing a good job of supplying tools to the various categories listed as necessary to the national defense.

The only way this can be checked upon is by having such outlets supply true statements of the percentage of sales of tools going directly or indirectly for defense. These are supplied to the manufacturer.

The manufacturer coordinates and compiles these thousands of reports and from them makes up his case to put before the proper governmental authority to be awarded a priority to obtain raw materials to make tools and deliver through the outlets in question. If the manufacturer does not receive these statements from his custo-

mers, he in turn cannot get raw materials to build tools and hence the supply will be cut off.

It is, therefore, absolutely necessary that the manufacturers and their thousands of dealers cooperate so that the supplies to both may be maintained. The first step in this cooperation is the filling out monthly by the merchant of the forms requested by the manufacturer.

The manufacturer, in self-defense and in order to carry out the spirit of the Government's intention, must limit supplies of tools to those merchants who show a low percentage going to necessary channels, and he is thoroughly justified in cutting off supplies completely to merchants who do not cooperate to the extent of returning the report forms properly filled out.

The Defense Supplies Rating Plan appears to be a good and workable system but no system will work itself. Unless each link in the chain performs its part thoroughly and promptly, supplies will be limited.

True, there is a lot of work involved. That is one of the sacrifices necessary to war economy. The work cannot be avoided except at a terrible cost in shortages of merchandise. Full cooperation is urged on the part of every merchant handling goods coming under the Defense Supplies Rating Plan.

Very truly yours,

DILLON STEVENS, CHAIRMAN,
CO-ORDINATING COMMITTEE
FOR NATIONAL DEFENSE
SERVICE TOOLS INSTITUTE.

(The priority specialists of the Aeronautical Chamber of Commerce have indicated concurrence with the foregoing statement. The Chamber points out that at its Regional Priorities Committee meetings it has been agreed that the best method of coping with such situations is through an educational program in conjunction with its member manufacturers and OPM.)

Stressed is the point that the reporting of all defense sales make it just that much more possible to carry on the jobbers' activities which are just as essential to other industrial fields as to the aeronautical industry.—The Editors.)

CAA Plans Specialized Mechanic Ratings

Proposal Would Rank Technicians by Specific Work Performed; Revised System Expected to Shorten Training Period

By LEONARD EISERER

COMPLETE revision of the existing aviation mechanics rating structure with definite emphasis on specialization is currently under consideration by the CAA's general inspection division, in an effort to align CAA certification more closely with the specific skills required for particular tasks.

The new system, which would be effected through amendment of Part 24 of the Civil Air Regulations, proposes to break down the present general categories of aircraft and aircraft engine mechanics on a graduated scale according to the type of work performed.

By so doing it is expected to speed up the output of mechanics needed for the defense program by sanctioning the training of students for specific purposes in shorter time than is now required for the general mechanic rating.

Necessary Step

While the move appears to have no causal relation to recent proposals for the creation of a mechanics training unit under CAA, similar to CPTP, it is described by F. M. Lanter, general inspection division chief, as a necessary step should such a mechanics training program materialize.

Under the projected arrangement, which has been submitted by the CAA to the affected members of the industry for suggestions, certificated aviation mechanics will be classified into four main groupings: (1) aircraft, (2) aircraft engine, (3) aviation mechanic specialist and (4) factory mechanic. Except for the factory mechanic, each type will be further ranked in ascending grades of (a) mechanic, (b) senior mechanic and (c) master of maintenance.

Rated for Type

While at present mechanics are classified by the CAA merely as "aircraft" or "aircraft engine," in the proffered set-up aviation mechanics will be rated for the type of equipment on which they are considered competent to work. Thus, a mechanic in the aircraft classification will be rated for (1) composite aircraft or (2) metal aircraft, or both. Metal aircraft are defined as planes of all metal construction except for control surfaces or minor non-structural members, composite aircraft being all those not falling within the preceding definition.

Aircraft engine mechanics will likewise be divided into two groupings according to the type of engines on which the individual is sufficiently experienced. These type ratings are for (1) unsupercharged engines and (2) supercharged engines, the distinction being that any engine equipped with a rotary induction system is considered supercharged.

It is not planned that aviation mechanic specialists will carry type ratings—that is, for aircraft or aircraft engines—since their work will be classified into seven other categories: (1) propellers, (2) instruments, (3) radio, (4) electrical systems, (5) hydraulic systems, (6) engine carburetion systems and (7) engine ignition systems. An aviation mechanic specialist will be obliged to hold one, but he may hold all, of the category ratings.

Specialist graduates would be limited to service in their particular sphere, working under direction of men with mechanic tickets. With added experience and the passing of CAA examinations, the specialists would be able to improve their ratings.

Mechanics in the factory classification will consist of those employed by a manufacturer holding a currently effective production certificate, if in direct charge of the inspection, maintenance, overhaul, repair or alteration of aircraft, engine, propellers or instruments under construction.

In addition to classification by type of equipment, aviation mechanics will be further rated for the type of service they are deemed competent to perform upon each type of equipment as well as for the type of operation in which the equipment is used.

Service ratings for all mechanic classifications proposed are (1) maintenance and service, and (2) repair and overhaul, except that

for the specialist categories the number one rating above will read "installation, maintenance and service."

All aviation mechanics would be required to own at least one service rating for each equipment type rating held, except those graded as masters of maintenance, who will automatically hold all service ratings, as well as all type ratings for the general classification in which they are graded.

Finally, operation ratings would be applied to the mechanics depending upon the type of service in which the equipment is used, these being (1) air carrier operation and (2) non-air carrier operation.

Flexible in Operation

The proposed plan while intricate in outline, would, according to Lanter, prove exceedingly flexible in operation, permitting aviation mechanics to qualify for any combination of ratings with regard to grade, type of equipment and service.

Thus some possible airmen rating record entries would be:

Aircraft mechanic rated for repair and overhaul on composite aircraft used in non-air carrier operation.

Senior aircraft mechanic rated for both (1) maintenance and service, and (2) repair and overhaul on metal aircraft used for air carrier and non-air carrier operations.

Aircraft engine mechanic rated for maintenance and service on unsupercharged engines used in non-air carrier operation.

Master of maintenance for air carrier aircraft engines, which would include all engine type and service ratings.

Commenting on the new rating system, Lanter expressed confidence that the plan as sketched would benefit both schools and students. Its adoption would prove advantageous to the schools, he said, since it would allow them to train students for specific purposes, graduating mechanics from specialized courses in shorter periods of time than at present.

Mechanic students, he pointed out, would get more advantages than at present, since they could concentrate on a specific course of study and receive a particular CAA rating at less cost and in shorter time than required for the existing general CAA ratings.

Advancement in ratings by doing especially good work in the factory or at repair and maintenance bases would be readily possible for mechanics, with senior mechanic rating as the next step up open to a man with approximately three years' experience, and master of maintenance or top rating open to men with about five years' experience. The system, it is asserted, would place more stress upon merit than upon time in service, paving the way for rapid advancement of the more skilled.

Ryan Buys Control of Training School

Purchase of the controlling interest in the Westwood School of Aeronautics by Ryan Aeronautical Co. and reorganization of the school under the name of Ryan Aeronautical Institute for the purpose of conducting Westwood's correspondence training has been announced by T. Claude Ryan, president of the aircraft firm.

John P. Morris Is Named Director of Civilian Pilot Training Program

In his second important promotion since last spring, John P. Morris has been elevated from his position as assistant director of the CAA's Civilian Pilot Training Service to the top spot in CPT, replacing Grove Webster, who resigned to return to private aviation.

Morris, who holds the rank of Major in the Air Corps Reserve, brings to his new task aviation experience dating back to 1917, as well as working knowledge of CPT gained from his direct association with the program since its inception in 1939.

His first connection with CPT came as chief private flying specialist of the CAA's 5th Region at Kansas City, Mo., where he remained until he was transferred to regional superintendent of CPT at LaGuardia Field, N. Y., in July, 1940. Then in April of this year Morris came to Washington, D. C., as assistant chief of CPT, succeeding John Groves who was named at that time to manage the new Washington National Airport.

During the World War, Morris served overseas as flight instructor at the U. S. Army base, Issoudun, France. After the war he established the first airport in Pennsylvania, Rodgers Field, just outside of Pittsburgh, which he operated from 1921 to 1934, when he was called upon to administer the state's \$17,000,000 WPA airport program. Under Morris' direction 33 airports were constructed and linked into a state-wide system. Holder of active pilot's certificate No. 457, Morris has logged more than 6,000 flying hours.

In his initial statement as director of CPT, Morris reassured the aim of the CAA's pilot program as that of "turning out good pilots and more good pilots for the defense program. We plan during the winter sessions to emphasize training of instructors more than formerly to attempt to eliminate a threatened bottleneck in the kind of personnel in the armed forces."

W. G. Stewart, former head of the CAA's performance division, has been appointed assistant director of CPT.

Group Commander



John Paul Riddle

President of Embry-Riddle School of Aviation, Miami, Fla., who has been appointed a group commander of the Florida State Defense Council, Air Corps Division, with headquarters at Miami.

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NASAO In Favor of Closer State-Federal Relationships

WITH a packed agenda ranging from state vs. federal rights to military flight training, the National Association of State Aviation Officials went on record at its 11th annual convention at Providence, R. I., Oct. 2-4, in favor of closer state-federal relationships and called for a wide variety of reforms and recommendations.

The association recommended that greater consideration be given to CPTP operators financially committed under CPTP before withdrawal of their contracts, and recommended a federally sanctioned uniform civil air defense program.

On the military side the association resolved that the Congress immediately create a separate and distinct air force with cabinet representation, and condemned the present Army policy of centralizing military flight training below the 37th parallel because "the time, place and climatical conditions in case of war cannot be selected."

A request was made that the CAA reestablish a state co-ordinator with full power to represent that federal agency, and asked closer cooperation between state and federal agencies on airport location and developments within each of the 48 states.

Another point in the new platform asks the Civil Aeronautics Board to give ten days notice on all public hearings to all parties concerned.

Obviously disturbed by the number of individuals now employed by CAA and CAB who have had no past connection or knowledge of aviation, the association asked that control and regulation of aviation be placed in the hands of persons with a recognized aviation background.

Simpler air regulations "in place of the present complicated and voluminous C.A.R., was requested, as well as a reduction in the age limits and formal educational requirements of employees of weather bureau and air traffic control services.

Other resolutions adopted placed the association on record, as follows:

Opposes any requirements at this time wherein charter operators might be required to provide themselves with multi-motored equipment in order to continue their operations.

Opposes any relaxation in the use of equipment or safety regulations affecting airline operations and the practice of permitting provisional overload.

Condemns the discontinuance of the U. S. Airport Directory as being detrimental to the safety of aircraft and airmen.

Favors adoption by the states of a uniform traffic pattern and procedure for all civil aircraft.

Commends establishment of the present inter-departmental air traffic board and recommends that this board be the sole agency for coordinating air traffic under authority of existing legislation.

Dexter C. Martin, state director of aviation for South Carolina, and retiring president, presided until the election at the close of the convention of Asa Rountree as president.

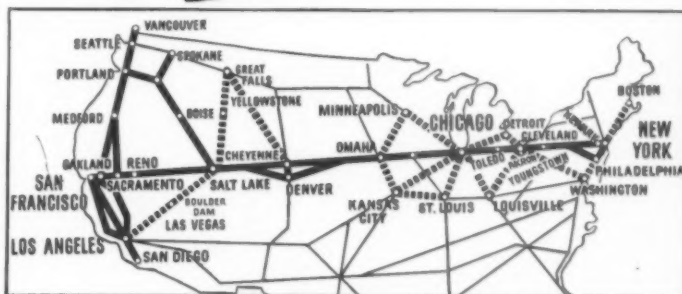
Twenty-two states were represented. The 1942 convention will be held in Mobile, Ala.

Asa Rountree Is Named NASAO Head

Asa Rountree, director of airfields and development for the Alabama State Aviation Commission, was elected president of the National Association of State Aviation Officials at the annual meeting in Providence, R. I., on Oct. 4.

Other officers elected were: first vice president, A. H. Near, chairman of the Kentucky Aviation Commission, Louisville; second vice president, Capt. Leo G. Devaney, director of the Oregon State Board of Aeronautics, Portland; third vice president, Earle L. Johnson, director of the Ohio State Bureau of Aeronautics, Columbus; secretary, Sheldon B. Steers, director of the Michigan Board of Aeronautics, Lansing; legal counsel, George B. Logan, attorney, of St. Louis, Mo., and co-counsel, Howard C. Knotts, attorney, of Springfield, Ill.

The Business Route of the Nation



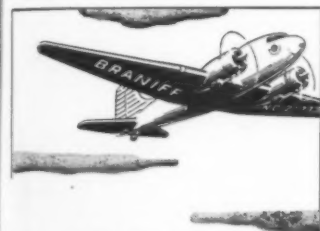
Twenty-one years ago the Government laid out the first coast-to-coast airway. Short, direct, centrally located for year 'round operations, it spanned the heart of the country's business industry and agriculture.

Today that route is United Air Lines' Main Line Airway—the business route of the nation. It serves the industrial East; the sleepless factories of the Great Lakes region; the market basket of the middle West; and every major Pacific Coast city.

Today it plays a vital part in speeding the most important business this nation has ever undertaken—national defense. It is helping to build planes, tanks, guns, ships . . . faster . . . as men, mail and materials save time over the business route of the nation.

United Air Lines

Year 'Round, The Main Line Airway



SOUTHWEST BY BRANIFF TO AMERICA'S DEFENSE CENTERS

Men who must keep their time productive are making every minute count . . . by flying Braniff Southwest to the great centers of defense and production. Counting all costs . . . it saves money to save time by flying . . .

BRANIFF Airways
SOUTHWESTERN HOSPITALITY ON WINGS

OPERATED IN THE INTERESTS OF COMMERCE, THE POSTAL SERVICE AND NATIONAL DEFENSE

U.S. Civil Plane Production Rises 65% in First Six Months With Trend Toward Greater Horse Power Types

First Half Output

Totals 3,775 Against
2,289 a Year Ago

CONTINUED trend toward more powerful engine installation in airplanes built for civil use is reflected in figures released by the CAA on domestic civil airplane production for the first half of this year.

The biggest decline in aircraft production is found in the less than 50 hp. category, where output dropped from 256 a year ago to a mere 10 this year, while the greatest gains are shown in the 71-225 hp. ranges.

During this year's first six months a total of 3,775 planes were produced by U. S. manufacturers for civilian use, an increase of 65% over the 2,289 for the corresponding period a year ago.

Single Engine Output

Considering the production by engine installation, output of single engine 71-100 hp. planes increased 284% over a year ago, single engine 166-225 hp. planes 650%, and multi-engine 166-225 hp. planes 733%.

Effect of CPTP in creating a market for lightplane manufacturers otherwise facing severe curtailment in output during the defense program is seen in the production figures.

Of the 3,775 planes manufactured in the 1941 first half, 89% or 3,378 were of the type used in the CPTP elementary course—2,265 in the 1-2 place single engine class of 51-70 hp., and 1,113 in the 71-100 hp. group.

Total of 105

In the single-engine 166-225 hp. category, which includes planes used in the CPTP secondary course, the first half production totaled 105, against only 14 a year ago. Multi-engine plane output in this class increased from three during Jan.-June, 1940, to 25 this year.

In the transport categories, consisting of multi-engine planes of six-place and over, there was a 13% gain in output over a year ago.

Production of planes in the 6-17 place range, which would include the Lockheed Lodestar transport for airlines, totaled 21 this year, compared with only 11 in the 1940 first half, while craft of 18 place and over numbered 65 this year against 66 last year.

Six Months U. S. Civil Aircraft Production

Production by Type

	January-June 1941	1940	Percent of Increase or Decrease
Landplanes:			
1-2 place			
Single engine	2,880	1,786	+61%
Multi-engine	00	2	
3-5 place			
Single engine	757	396	+91%
Multi-engine	7	3	
6-17 place			
Multi-engine	21	11	+91%
18 place and over			
Multi-engine	65	66	
Seaplanes			
Single engine	3	10	
Multi-engine	5	0	
Amphibians			
Single engine	0	1	
Multi-engine	18	0	
Total single engine	3,640	2,207	+65%
Total multi-engine	116	82	+41%
Unclassified	19	14	+36%
Totals	3,775	2,289	+65%

Production by Engine Horsepower

	January-June 1941	1940	Percent of Increase or Decrease
50 hp. and under			
Single engine	10	256	-96%
Multi-engine	0	1	
51-70 hp. Single engine	2,256	1,496	+51%
71-100 hp. Single engine	1,113	290	+284%
101-165 hp. Single engine	120	78	+54%
166-225 hp.			
Single engine	105	14	+650%
Multi-engine	25	3	+733%
226-300 hp. Single engine	9	21	-57%
301-600 hp.			
Single engine	18	37	-51%
Multi-engine	1	6	
601 hp. and over			
Single engine	0	1	
Multi-engine	90	72	+25%
Total single engine	3,640	2,207	+65%
Total multi-engine	116	82	+41%
Unclassified	19	14	+36%
Totals	3,775	2,289	+65%

Radio Requirement Order Given By Ohio Aeronautical Commission

AS PART of a general nationwide trend toward requiring radio receivers and two-way radio for aircraft moving in and out of busy airports, the Ohio Aeronautics Commission has notified all pilots in the state not to fly into fields where there is airline operation without at least a receiver in the plane.

Earle L. Johnson, state aeronautics director, has announced that legislation making the receiver equipment mandatory will not be sought, at least for the time being, if pilots are cooperative and observe the unofficial regulation voluntarily.

"We're trying education now," Johnson said, "but if this method doesn't work, we'll ask for legislation to make receivers mandatory for all airplanes in the state.

"We're trying to make the pilots see that it is for their own benefit to have receivers. Two-way radio is preferred but planes should at least have receivers when going in and out of busy airports. So far the plan is working. Pilots won't fly to Cleveland Municipal Airport today, for instance, without receivers. They aren't welcome without receivers and know it."

STATEMENT OF THE OWNERSHIP, MANAGEMENT, CIRCULATION, ETC., REQUIRED BY THE ACTS OF CONGRESS OF AUGUST 24, 1912, AND MARCH 3, 1933.

of AMERICAN AVIATION published semi-monthly at Harrisburg, Pa., and Washington, D. C. for October 1, 1941.

Washington
District of Columbia

Before me, a Notary Public in and for the District of Columbia, personally appeared Richard R. Patschke, who having been duly sworn according to law, deposes and says that he is the business manager of the AMERICAN AVIATION Magazine and that the following is, to the best of his knowledge and belief, a true statement of the ownership, management (and if a daily paper, the circulation), etc., of the aforesaid publication for the date shown in the above caption, required by the Act of August 24, 1912, as amended by the Act of March 3, 1933, embodied in section 537, Postal Laws and Regulations, printed on the reverse of this form, to wit:

1. That the names and addresses of the publisher, editor, managing editor and business managers are: Publisher American Aviation Associates, Inc., 100 Telegraph Building, Harrisburg, Pennsylvania; Editor, Wayne W. Parrish, 300 American Building, Washington, D. C.; Managing Editor, George N. Shumway, 300 American Building, Washington, D. C.; Business Manager, Richard R. Patschke, 300 American Building, Washington, D. C.

2. That the owners are: American Aviation Associates, Inc., 100 Telegraph Building, Harrisburg, Pa.; Edward J. Stackpole, Jr., 100 Telegraph Building, Harrisburg, Pa.; Albert H. Stackpole, 100 Telegraph Building, Harrisburg, Pa.; Wayne W. Parrish, 300 American Building, Washington, D. C.

3. That the known bondholders, mortgagees, and other security holders owning or holding 1 per cent or more of total amount of bonds, mortgages, or other securities are: None.

4. That the two paragraphs above, giving the names of the owners, stockholders, and security holders, if any, contain not only the list of stockholders and security holders as they appear upon the books of the company, but also, in cases where the stockholders or security holder appears upon the books of the company as trustee or in any other fiduciary relation, the name of the person or corporation in whom such trustee is acting, is given, also that the said two paragraphs contain statements embracing affiant's full knowledge and belief as to the circumstances and conditions under which stockholders and security holders who do not appear upon the books of the company as trustees, hold stock and securities in a capacity other than that of a bona fide owner; and that affiant has no reason to believe that any other person, association, or corporation has any interest direct or indirect in the said stock, bonds, or other securities than as so stated in him.

(Signed) RICHARD R. PATSCHKE
Business Manager

Sworn to and subscribed before me this 15th day of September, 1941.

(Signed) Mildred G. Murrah
(My Commission expires Nov. 15, 1941)

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From State to State

Louisiana

MAJ. T. B. Herndon, director of the Division of Aeronautics for Louisiana, reported for duty with the Army on Oct. 6. He has been assigned to the office of Under-Secretary of War Robert Patterson in Washington, D. C.

His state division will continue the extensive airport development program which he initiated some months ago. Plans have been worked up for seven new seaplane bases, three radio range stations, 33 new airports, three new weather stations, and 270 air markers. It has not yet been determined whether a successor will be appointed as director of the division while Maj. Herndon is on active duty with the Army.

Vermont

VERMONT has a new aeronautics program. Ray Thompson remains as aeronautical inspector reporting to the Commissioner of Motor Vehicles, but serves also as secretary to the new Vermont Aeronautics Commission, the latter body having to do with planning and development.

Chairman is Phillip Shutler, chairman of the state planning board, and members are: H. E. Marsh, Commissioner of Motor Vehicles; Hubert Sargent, Commissioner of Highways; Arthur Hawkinson, private pilot of St. Johnsbury; and Gray S. Clark, of Rutland.

New Hampshire

THE NEWLY created New Hampshire Aeronautics Commission is now fully organized and laying out an intensive program. Russell Hilliard is director. Members are: James F. O'Neil and Ralph E. Langdell, of Manchester; Robert W. Potter, Concord; Robert E. Gould, Newport, and Alvin A. Lucier, of Nashua. O'Neil is chairman.

Massachusetts

LT. CROCKER SNOW, one of New England's best known aeronautical officials, has resigned as director of the Massachusetts Aeronautics Commission to go on active duty with the Air Corps Ferrying Command at Presque Isle, Me. He is succeeded by John Lasell. Lt. Robert M. Love, chairman of Inter City Aviation Inc. at Boston and a member of the Massachusetts Aeronautics Commission, has gone on active duty with the Ferrying Command and has been assigned to Houlton, Me.

Love resigned as president of Inter City, fixed base operator and aircraft distributor, and was succeeded by Kendall G. Hathaway who has been connected with aviation for 10 years. Love remains on the company's staff as chairman.

Utah

SEPARATION of the Utah Aeronautics Commission from the state's highway department has just been effect and as a result W. D. Hammond, who was chairman of the commission, is no longer associated with the aeronautical end. He remains with the highway department. Joseph Bergin remains as director of the commission and the following new commission members have been appointed: John S. Evans, Layton Maxfield, and Lester A. Blackner.

Registration of pilots and aircraft was discontinued a year ago, partly because of the difficulty of maintaining an accurate list of flyers. But Bergin has announced that the commission has decided to resume registration and forms are now being prepared.

Rhode Island

WILLARD M. Fletcher, Administrator of Aeronautics for Rhode Island, has been elected chairman of the New England Aviation Council to succeed Crocker Snow, who has resigned as director of the Massachusetts Aeronautics Commission to go on active duty with the Army.

The council has endorsed the proposal of J. Burleigh Cheney, chairman of the New England Council's aviation committee, that the Third New England Aviation Conference be held in Providence, R. I., May 1 and 2, 1942.

Minnesota

MINNESOTA has a new aeronautical commission set-up but is currently worrying about how to raise the money with which to support it.

Some years back the state legislature passed a general aeronautics act creating the Minnesota Aeronautics Commission to be operated by assessing registration fees on pilots, airplanes, flying schools and airports. But no effort was ever made to collect the fees. Recently the governor gave the commission a new bill of health and an acting director, W. M. Beadie, has been put on the job.

The commission's office is 323 State Capitol Bldg., St. Paul. One of the agency's objectives is to bring the state's aviation laws into conformance with federal laws. An airport program is in the making.

According to the law, every pilot in the state is to pay a fee of \$2.00 for registration. Then there is an annual registration fee of \$10 for every airplane, every flying school and every airport. The state has decided to forget about next years—but make collections from now on, although no plan is yet formulated. There have been few complaints on the part of those who would pay the fees.

New commission chairman is Stan E. Hubbard, former pilot and owner of radio station KSTP. Other members are: Les Schroeder, of the University of Minnesota; Maj. Ray Miller, now on active duty; Croil Hunter, president of Northwest Airlines, and Dr. Maurice N. Walsh, of the Mayo Clinic at Rochester, Minn.

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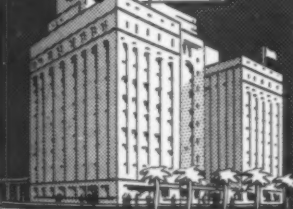
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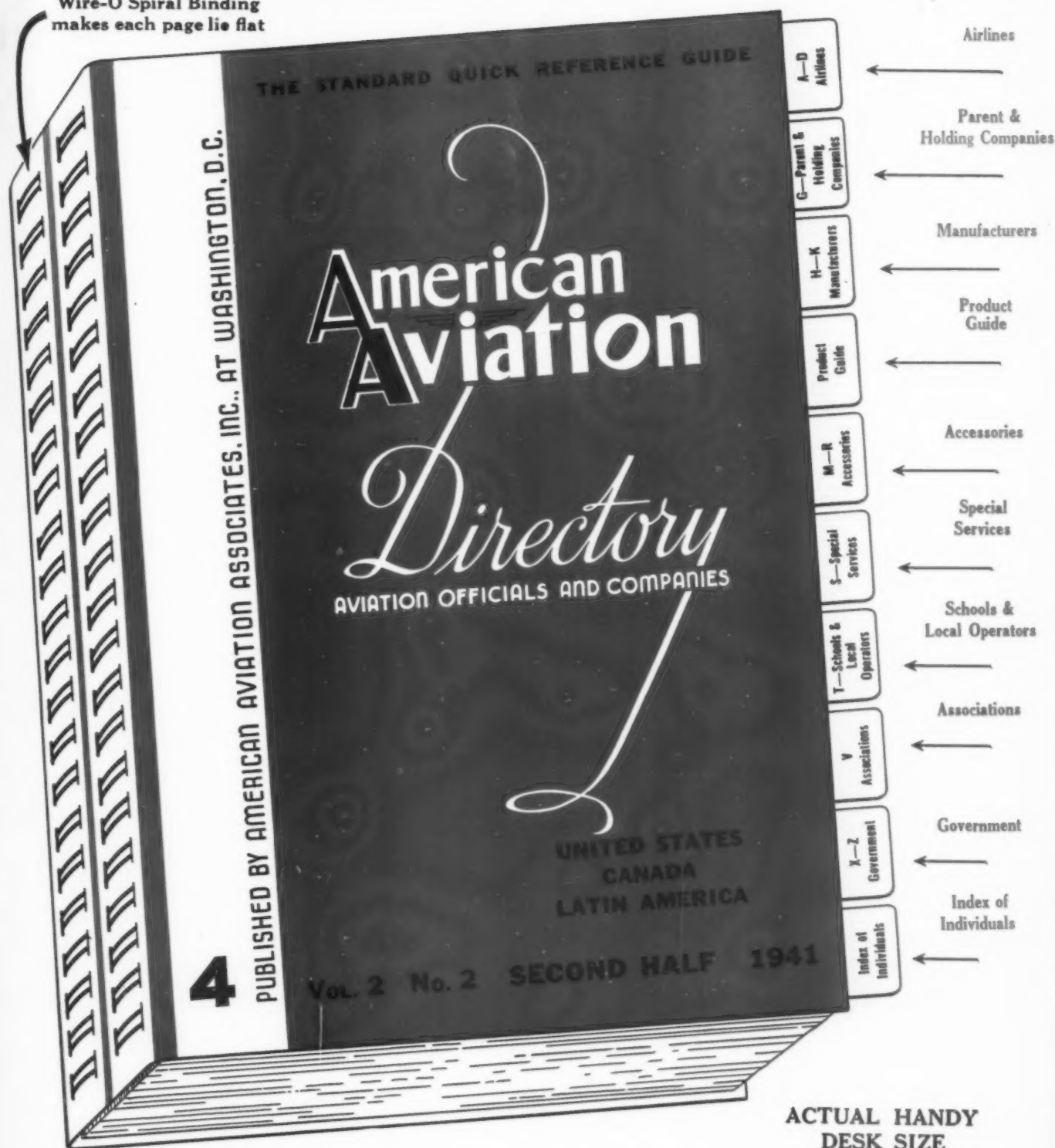
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Airline Mail Rate Situation Runs Into a Deadlock; Civil Aeronautics Board Forced to Take Next Step

By ERIC BRAMLEY

IT IS up to the Civil Aeronautics Board to take the next step in breaking the deadlock which now exists in the domestic air mail rate situation—one of the most vital questions confronting the aviation industry today.

Board officials would not hazard a guess as to when this next step might be taken. They did, however, hint what steps were being considered.

Since passage of the Civil Aeronautics Act, there has been much talk both in the industry and in the government regarding new methods of payment.

Airlines now receive air mail pay on a mileage basis, somewhat similar to that used by the Interstate Commerce Commission before passage of the Act. There are a few differences: weight-credit trips were abolished by CAB, the 33 1/3c maximum rate is no longer effective, the ICC's "sliding scale" (under which payments varied inversely with miles flown) was discarded, and airport-to-airport mileage is used instead of airway mileage. However, the method of payment—by mileage—remains the same.

CAB feels definitely that its side of the story on what has been done about air mail rates should be told. This story has been explained as follows:

Cases Scheduled

After passage of the Act, many rate cases were scheduled by the Board, some at the carriers' requests, some on CAB's initiative. These cases were necessary because many airlines were in serious financial straits. When it had finished some of these cases, CAB began thinking of the general rate situation.

Last December CAB invited the carriers to a rate conference at which several basic questions were to have been discussed. This conference was canceled at the request of the carriers, who were to have submitted briefs on the basic questions. Those briefs which were received were not very helpful, CAB aides alleged.

On May 21, last, CAB took its second step. As an appendix to the Continental Air Lines rate decision, CAB presented to the industry two proposed rate formulae, on which it asked "critical comment." Such comment was not forthcoming.

CAB members are inclined to feel that the industry has let them down by not meeting them half way on these proposals.

What the Board's next step will be has not been decided. One official said the Board might even go so far as to put a new formula in a proposed report on a rate case. This would in effect force comment from the industry. Another move, not quite so drastic, might be the issuance of a proposed report with two rate recommendations, one under the present system and one under a formula. This would give the airlines opportunity to compare the two.

CAB is also thinking of the time when an airline may have enough revenue, exclusive of mail, to cover all expenses and in addition return a profit. In such a case, the airline will still be entitled to a fair price for rendering air mail service, and CAB must determine what this minimum figure will be. Members feel that the industry's comment on this situation would also be helpful.

While CAB is still working on the rate situation—and may come up with still another formula—it can be said that no final step will be taken without giving the industry full opportunity for discussion and comment.

Industry's Attitude

On the other side of the picture, some airline officials are frank to admit that comment has been lacking on CAB's formulae. General impression is that the industry does not want to be pinned down at this time on the question of whether or not it favors a formula.

Some officials and industry lawyers state that they do not favor the setting of air mail rates by formula. They add that in five or ten years there may be reason to change this opinion but that at the present time air transport is still in the growing stage.

There has even been some question whether a formula could be used under the Civil Aeronautics Act. Section 406(b) of the Act states that in fixing rates, the Board, "considering the conditions peculiar to transportation by aircraft and to the particular air carrier or class of air carriers, may fix different rates for different air carrier or classes of carriers, and different classes of

services" (italics supplied). This section, it is claimed, requires the Board to consider each particular carrier's rates from time to time. It is not felt that this could be accomplished adequately under a formula.

Small Lines Fear

A formula is also feared by the smaller lines, who state that although it might work for larger companies, it could not be applied to them fairly. Some airlines feel that as long as they are being adequately compensated under the present system, there is no reason for a change.

This attitude was expressed in one of the briefs filed after the Dec. 2 conference was canceled. The main consideration in the determination of fair and reasonable rates "still is the value of the service rendered the American public rather than the volume of the mail transported . . . Mail service as performed by public utilities operating as publicly regulated monopolies cannot be uniformly evaluated in terms of a quantitative unit of service performed," according to the brief.

(It can be stated definitely that, contrary to newspaper stories, the Dec. 2 meeting was not canceled because the airlines felt they might be accused of "collusion" by meeting with CAB. The carriers had nothing helpful to offer at a meeting, but asked the right to file briefs.)

CAB Criticized

CAB is criticized for failing, in its past decisions, to state exactly what it considers a "fair return," upon what this "fair return" should be

based, and whether "going concern value" should be one of the factors included. One airline official has expressed the opinion that the much-discussed proposed report on American Airlines' rate case was designed to tempt the other carriers into stating what they considered a fair return.

Any statement on fair return should come from CAB, this official maintains. CAB should have the data from which to formulate a fair return, he states, adding that "they fingerprint us every 30 days" (complete statistics on monthly operations must be reported to CAB on form 2780—Ed. note).

Some neutral observers contend that the airlines probably are justified in refusing to comment on proposed formulae on the grounds that such comment would "put them on the spot." The CAB, they point out, is responsible for the public interest and therefore should take all necessary steps.

It appears up to CAB to break the deadlock. Industry comment will be forced only when new developments touch sufficiently close to home.

Pan Am. Rate Probe Ends; Panagra Next

CAB's exhaustive investigation into the air mail rates being paid Pan American Airways on its Latin American routes finally closed Sept. 29 when PAA's counsel stated that President Juan T. Tripp would not be able to testify because of the press of defense matters.

Hearing will next be held on investigation into the rates of Pan American-Grace Airways. Exhibits in the case were to be presented to CAB Examiner F. W. Brown by Oct. 15, with a pre-hearing conference scheduled for two weeks later. Following this, a hearing date will be set.

Commenting on request of PAA counsel to submit exhibits in place of Tripp's testimony, Samuel E. Gates, CAB counsel, said he was "at somewhat of a loss" to understand this action. He pointed out that it would deny the right of cross-examination. Gates said he would not offer Thomas Hardin, who made a study of PAA's operations, as a witness.

AAA Expands Service

All American Aviation on Sept. 26 inaugurated pick-up service to Lewistown, Carlisle and Shippensburg, Pa., bringing the number of cities and towns on AAA's system to 112.

Glens Falls Stop Extended

Canadian Colonial Airways Inc. has received permission to continue service to Glens Falls, N. Y., until Nov. 30 instead of Oct. 1. The company's certificate from CAB allows service only between June 1 and Sept. 30 of each year.

Airline Riders Pay 5% for Defense

IF YOU PLAN to make a round trip by air between New York and San Francisco, you now pay the regular fare of \$269.90 plus \$13.50—defense tax.

A round trip on the relatively short Washington-New York run costs you \$21.90 fare plus \$1.10—defense tax.

Suppose you have to get to Singapore in a hurry and decide to take Pan American Airways. You'll pay \$1,480 for the round trip plus \$74.00—defense tax. If you have business in Europe and make a round trip from New York to Lisbon, you'll get nicked \$945 plus \$47.25—defense tax.

A ride in an airline limousine from downtown New York to LaGuardia Field will cost you \$1.00 plus five cents—defense tax.

If it will make you feel any better, you can deduct these little items from your income tax.

Also, you won't escape the tax by using a railroad, a bus line or a steamship line, because they're taxed too—the same 5% on fares.

The 5% defense tax on air travel went into effect Oct. 10. If an airline sells the ticket, the salesman collects the tax. If you purchase your ticket from a travel agent, he collects. Airline counter salesmen expect that collecting the tax and keeping their books straight will entail quite a little more work.

If you hold an air travel card and are entitled to a 15% discount, you will be taxed on the net fare after discount. You pay this when you buy the ticket. Persons traveling on official government business are not subject to the tax.

Last year, the domestic airlines did \$52,932,000 worth of passenger business. Based on a \$70,000,000 year, Uncle Sam's take would be \$3,500,000. And that ain't hay.

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Totals

a Figure
b Includes

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TWA
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Western
Totals

a Figure
b Company
c Transfer
d Company

Eight U. S. Airlines Profit in 1940-1941

Aggregate Net Income of Domestic Carriers Totals \$1,647,000 for Period Ended June 30, 61% Less Than Previous Year

END OF the last fiscal year on June 30 found only eight of the U.S. domestic air carriers operating profitably, despite record traffic registered by the industry in every department during the period.

While sizable gains in passenger, mail and express traffic combined to lift total operating revenues to the unprecedented high of \$83,960,000, or 29% above the comparable figure for the previous fiscal year, operating expenses climbing 37% to \$80,713,000, plus increased deductions for federal and state income taxes, left the industry an aggregate net income margin of only \$1,647,000.

This represents a more than 61% slash in earnings from the \$4,300,000 aggregate profit reported by the transport industry for the year ended June 30, 1940, when 14 companies operated in the black for the most profitable fiscal period in airline history.

Important items contributing to decreased earnings experienced by

most of the carriers in the past fiscal year include the added costs flowing from the operation of more mileage with larger ships, depreciation on enlarged investment in new equipment, generally rising salaries, rents, and cost of supplies, and extensive training programs for replacement of personnel called to military duty.

Several of the companies were able to absorb these costs through an even more rapid rise in revenues and return a larger net income than in the previous fiscal year. Thus American Airlines earned \$1,837,861 after taxes, compared with \$1,821,059 a year ago; Eastern \$1,617,015 against \$1,023,697 the year before, and Northwest \$304,787 compared with \$274,106.

Clue to the effect of new and larger equipment on the earnings of small and medium sized airlines is found in study of the company reports for the past two fiscal years. Braniff, Chicago & Southern, Continental, Delta, Mid-Continent,

National, Northeast, Pennsylvania-Central and Western Air, each acquired larger aircraft during the past year, and each reported lower earnings than for 1939-40.

Catalina, Inland and Inter-Island, on the other hand, operating the same type of equipment both years, were able to convert the increased revenues into higher net profits than the year before.

A survey of the company statements filed with the Civil Aeronautics Board indicates that the air transport industry effected more efficient equipment usage to meet the vastly increased traffic demands in the face of restrictions on expansion resulting from the accelerated defense program.

In the year concluded June 30, last, the airlines flew 29% more revenue plane miles, 38% more revenue passenger miles, 20% more mail pound miles, and 38% more express-freight pound miles, than in the previous fiscal year.

Yet during the same period, the total number of transport planes in service increased only 14%, from 325 to 371. The combined seating capacity, however, went up 23%, from 5,315 at June 30, 1940, to 6,545, with the average number of pas-

senger seats per plane rising from 16.3 to 17.6. This larger seating capacity is reflected in the industry load factor which averaged 56.52%, or two points below the figure for the previous year, despite the new traffic peaks attained.

Breakdown of total operating revenues for the past few years shows the air transport industry deriving a proportionately larger share of income from passenger traffic, and a steadily decreasing portion from the transportation of mail.

Of the \$83,960,000 total operating revenues in 1940-41, some 70.9% or \$59,592,000 was from passenger service, 24.1% or \$20,309,000 from mail, and only 2.9% or \$2,436,000 from express and freight. By comparison, the ratios in 1939-40 were 67.2% passenger, 28.4% mail and 2.8% express-freight.

Ten years ago, in calendar 1931 mail transportation was the source of 82.5% of airline revenues, passenger traffic 17.2%, and express 3%.

Total assets reported by the airlines at \$60,619,000 a year ago, were up 32% to \$80,306,000 at June 30.

SUMMARY OF DOMESTIC AIRLINE TRAFFIC FOR 1940 - 41

(Compiled by AMERICAN AVIATION from Fiscal Reports, July 1, 1940-June 30, 1941, Filed with CAB)

	Total Passengers	Revenue Passengers	Rev. Pass. Miles	Avail. Seat Miles	Pass. Load Factor	Rev. Miles Flown	Pounds of Mail	Mail Lb.-Miles	Exp. & Frt. Pounds	Exp. & Frt. Lb.-Miles	Aircraft b Owned
All American	00	00	00	00	00%	602,722	110,948	13,362,307	8,924	1,219,927	9
American	1,081,779	1,016,738	354,151,325	536,383,101	86.03%	29,786,102	7,988,632	8,009,750,067	4,362,631	2,257,193,195	84
Braniff	144,428	130,428	39,300,062	89,862,639	43.82%	5,070,808	1,709,044	885,684,448	402,845	183,263,924	16
Canadian Colonial a	13,349	12,506	3,419,709	7,121,842	50.80%	345,671	37,960	11,186,018	13,276	3,852,477	8
Catalina	33,894	32,287	967,710	1,489,340	64.84%	182,077	00	00	189,283	4,778,490	2
Chicago & Southern	86,120	49,887	19,015,135	42,035,230	45.24%	2,119,698	613,721	265,039,182	102,825	82,867,852	6
Continental	20,618	18,311	5,556,927	13,992,763	39.71%	1,417,726	253,477	74,427,952	32,694	8,861,752	6
Delta	62,067	58,208	15,526,291	36,091,177	43.02%	2,591,683	581,984	216,133,791	106,965	32,978,319	3
Eastern	472,375	443,181	182,811,651	346,354,422	52.78%	18,129,161	5,394,838	2,982,050,591	1,798,843	1,048,212,701	38
Inland	14,780	13,041	3,397,931	11,249,680	30.20%	1,125,220	139,637	38,994,382	20,339	8,403,922	8
Inter-Island	35,134	34,943	4,960,366	7,568,525	65.84%	836,903	28,029	4,923,738	127,104	20,138,023	6
Mid-Continent	33,026	29,245	7,832,685	22,797,896	34.40%	1,985,765	499,323	132,189,584	63,446	15,183,896	8
National	33,311	29,959	7,264,322	16,910,016	42.96%	1,436,400	404,505	91,845,862	62,259	16,006,997	7
Northeast	36,616	31,947	4,908,354	11,073,852	44.32%	1,226,376	119,748	18,836,873	46,684	6,309,162	8
Northwest	149,726	138,687	54,883,709	121,475,920	45.18%	6,077,410	2,808,879	1,503,615,473	626,585	320,045,297	17
Penn-Central	274,079	255,596	46,872,014	94,877,770	49.40%	5,017,485	1,548,291	313,788,014	1,109,005	191,930,561	22
TWA	408,827	367,726	177,389,778	310,921,273	57.12%	18,141,391	5,525,917	4,399,777,345	2,083,488	1,315,388,894	44
United	848,532	484,202	236,413,585	383,386,784	61.66%	24,557,126	5,170,113	6,460,547,427	2,360,069	2,340,385,409	69
Western Air	63,521	56,272	16,215,478	39,573,428	40.03%	2,742,590	1,103,185	470,667,429	712,018	226,179,127	10
Totals	3,479,191	3,203,134	1,163,186,628	2,093,173,396	56.52%	123,060,206	37,022,929	22,632,787,485	15,345,963	8,310,181,765	271

a Figures are for six months ended June 30, 1941. Prior to Jan. 1941, the company reported to CAB on foreign air carrier form instead of present domestic Form 2780.

b Includes transport planes only, not those used for instrument instruction, etc.

AIRLINE REVENUES, EXPENSES AND NET INCOME

	Passenger Revenue	U. S. Mail Revenue	Exp. & Frt. Revenue	Operating Revenue	Direct Flying Expense	Indirect Flying Expense	Operating Expense	Net Income Before Income Taxes	Net Income Transferred to Surplus	Fixed Assets	Total Assets
All American	\$ 00	\$ 00	\$ 946	\$ 946b	\$ 145,061	\$ 74,245	\$ 269,799	\$ 271,364 (red)c	\$ 271,584 (red)c	\$ 260,867	\$ 748,624
American	17,957,120	4,053,494	653,348	23,062,913	10,913,206	5,443,939	30,385,787	3,601,161	1,837,861	7,449,997	19,410,411
Braniff	1,802,328	988,338	89,945	2,876,547	1,882,042	708,429	3,001,797	121,907 (red)	121,907 (red)	1,459,983	2,340,115
Canadian Colonial a	177,689	137,888	1,151	345,223	228,897	84,058	398,574	84,940 (red)	84,940 (red)	486,323	849,981
Catalina	161,835	00	1,848	164,572	62,173	24,872	189,196	6,691	6,691	11,116	170,371
Chicago & Southern	969,386	407,832	30,135	1,320,004	718,007	422,249	1,413,549	102,663 (red)	107,863 (red)	780,812	1,316,488
Continental	216,074	491,219	2,647	715,427	453,195	177,192	757,986	55,483 (red)	55,483 (red)	699,811	1,078,664
Delta	683,497	424,615	9,159	1,107,609	811,021	334,252	1,342,681	160,665 (red)	161,352 (red)	751,882	1,239,047
Eastern	9,571,703	1,925,759	343,448	12,043,193	5,681,467	2,279,890	9,781,145	2,273,686	1,617,015	3,484,241	12,880,499
Inland	139,191	372,016	1,780	516,206	296,995	136,821	808,777	9,198	9,198	85,943	311,233
Inter-Island	496,348	45,251	17,088	564,790	295,893	80,784	478,939	95,627	73,927	283,131	602,224
Mid-Continent	345,537	706,785	8,770	1,068,565	641,974	341,416	1,194,249	143,170 (red)	143,170 (red)	478,909	978,301
National	343,341	285,938	4,408	639,291	387,808	121,867	623,102	11,408	9,715	489,318	848,922
Northeast	270,132	299,200	3,189	607,646	335,092	239,191	688,800	56,115 (red)	56,115 (red)	626,600	1,068,930
Northwest	2,322,872	1,801,936	93,194	4,336,005	2,339,084	894,064	3,677,823	417,333	304,787	2,605,064	5,089,712
Penn-Central	2,602,065	890,813	75,462	3,578,007	2,130,785	813,729	3,677,823	328,723 (red)	312,923 (red)	2,284,816	5,873,779
TWA	8,984,277	3,030,479	371,329	12,815,066	7,440,487	3,016,651	13,488,231	911,829 (red)	912,562 (red)	6,288,304	12,199,292
United	11,717,534	3,945,600	704,012	16,760,682	9,077,218	4,373,934	16,947,990	54,308	20,491 (red)	8,225,096	16,437,146
Western Air	838,648	813,088	99,001	1,752,544	1,021,967	396,231	1,719,167	38,318	14,486	790,456	1,379,090
Totals	\$59,892,128	\$20,309,841	\$ 2,436,837	\$83,960,606	\$44,829,542	\$20,072,234	\$80,713,857	\$3,302,577	\$1,647,789	\$36,445,046	\$80,306,365

a Figures are for six months ended June 30, 1941. Prior to Jan. 1941, the company reported to CAB on foreign air carrier form instead of present domestic Form 2780.

b Company did not receive mail pay during fiscal year, since rate had not been established yet by CAB.

c Transferred to deferred debit.

d Company also received \$50,397 foreign government mail pay.



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Pan Am Moves 727

Army Men to CZ

Greatest Transfer of Army Technicians by Air Ever Attempted, Company Claims

THE "greatest transfer of Army technicians by air ever attempted in the Western Hemisphere" is being undertaken by Pan American Airways from its Brownsville terminal, according to the company.

By agreement between PAA and the engineering office of the War Dept., 727 men needed on defense work at the Canal Zone are to be flown from the U.S. to Panama during the last three months of 1941.

The movement is being carried out by addition of a special section of PAA's daily service between Brownsville and the Canal Zone, with an overnight stop at Mexico City.

The first contingent of 127 men completed its transfer during the first part of October, and a larger group of 600 will follow, starting early in November.

Smaller groups are regularly being moved from Miami to defense outposts in the Caribbean, from New York to Bermuda, and across the Pacific to Honolulu, Midway, Wake and Guam, the company states.

"The Brownsville-Canal Zone transfer, however, is the largest yet undertaken by commercial air transport," it adds.

AIR CARRIER RECORD

C.A.B. APPLICATIONS, HEARINGS, DOCKETS

APPLICATIONS

American Airlines has filed application for permission to include Hartford, Conn., as an intermediate stop on AM21.

Kansas City Southern Transport Co. is seeking routes between Kansas City and New Orleans and Ft. Worth-Dallas and New Orleans. (Complete story on page 37.)

TWA has asked that the Kansas City-Los Angeles portion of its fifth transcontinental trip be found to be required in the interests of commerce. If such a finding is made by CAB, the company states that the Post Office will place mail on the trip.

Pennsylvania-Central Airlines seeks permission to operate Grand Rapids-Traverse City on a year-round basis, instead of only during summer months.

CAB DECISIONS

CAB Adjusts UAL Rates

CAB has adjusted United Air Lines' air mail rates to allow for additional schedules.

Glens Falls Service Extended

Canadian Colonial Airways' service to Glens Falls, N. Y., has been extended from Oct. 1 to Nov. 30.

All American Mail Rate Set

All American Aviation's air mail rate has been set at 40c per mile, in an important decision. (Complete story on page 38.)

UAL Routes Consolidated

AM1, New York-San Francisco, and AM12, Salt Lake-Seattle-Spokane, have been consolidated by CAB. Consolidation removes the requirement that all flights between points east of Salt Lake City on AM1 and points northwest of Salt Lake on AM12 stop at Salt Lake. "However, in granting this authority... we are of the opinion that the amended certificate should contain some limitation upon the non-stop flights that applicant might, after full compliance with the Board's non-stop regulation, be authorized to operate," CAB said. "Therefore, we shall limit the authority granted in the consolidated certificate by providing therein that all flights between points on route 1 and points on route 12 omitting Salt Lake City shall be regularly scheduled to stop at either Cheyenne, Denver, or Rock Springs and Boise.

"The amended certificate will not affect United's existing rights with respect to non-stop service between points on route 1 and the certificate will be so phrased that it will not grant authority to operate scheduled flights between points on route 12 and points on route 1 west of Salt Lake City without making a stop at Salt Lake City."

EXAMINERS REPORTS

PCA Stop Disfavored

CAB Examiner John Belt on Sept. 29 recommended that Pennsylvania-Central Airlines be denied permission to include Elizabeth City, N. C., as an intermediate stop on AMS1.

HEARINGS AND ORAL ARGUMENT

PAA Hearing Closes

CAB investigation into the air mail rates being paid Pan American Airways in Latin America ended Sept. 29. (Complete story on page 32.)

Hearing Held on TACA Route

Hearing was held Oct. 2 on application of TACA to operate service between San Jose and Cristobal and/or Balboa. Lowell Yerex, president of TACA, testified that his company previously had obtained a waiver of the executive order prohibiting flying over the Canal Zone and that Zone authorities, because of this waiver, had requested that TACA land in the Zone. Yerex refused a request of Pan American Airways, intervener, that he produce written agreements and contracts which he may have with countries involved in the application.

Oral Argument on TACA Purchase

Oral argument was held Oct. 2 on application of American Export Airlines for CAB approval of purchase of TACA. (Complete story on page 38.)

CALENDAR OF HEARINGS

Oct. 15—American Airlines, oral argument on air mail rate case.

Oct. 27—Canadian Colonial, Seaboard Airways, Eastern National and Penn-Central, for various routes from New York to Florida and Nassau, and New York-New Orleans.

Nov. 3—TWA, Chicago & Southern, Eastern, for Indianapolis-Detroit and Memphis-Detroit routes.

Nov. 17—American Airlines, route from El Paso and/or Ft. Worth to Mexico City.

No Fatal Airline Crashes in 7 Mos.

U. S. airlines on Sept. 28 completed seven months of the heaviest operations in their history without a single fatal accident, according to announcement by Robert H. Hinckley, Assistant Secretary of Commerce for Air.

Since Mar. 1, the airlines have flown almost 90,000,000 miles on domestic and foreign routes. This exceeds their mileage for the entire year 1938, when there were eight fatal accidents.

The 1941 safety record to date,

Hinckley said, is far better than that of any previous year, despite a fatal accident in January and another in February.

A rate of more than 54,000,000 miles flown per fatal accident has been achieved, which compares with about 40,000,000 last year and 30,000,000 in 1939.

Fogg on Active Duty

Robert S. Fogg, chief of CAA's seaplane unit, has been granted a one year's leave of absence and is on active duty with the Air Corps. His duties are with the Traveling Cadet Board in New England.



The Birdmen's Perch

We've heard of birds that flew backwards to keep the wind out of their eyes—but who ever heard of a 'plane that flew right up its own exhaust pipe? See this month's Whopper!

Major Al Williams, alias "Tattered Wing Tips,"
Gulf Aviation Products Manager, Gulf Bldg., Pittsburgh, Pa.

FUNNYBONER DEPT.



Dear Major,

It happened the night before the 1938 Oakland Air Show. A banquet was being held for the contestants, officials, and us unimportant enthusiasts.

I had decided to fly a Taylorcraft across San Francisco Bay to Mills Field. The afternoon was dismal and squally, while fog stretched up the Bay, its base at about 100 feet. The tower said that Oakland was wet but that visibility was O.K. So, with fine disregard for the C.A.A. item concerning having both wing tips in one fog bank, I decided to make a quick dash through.

But with my mind more on the anticipation of hob-nobbing with aviation men of great renown than on the 'craft, I never gave the compass a glance. The seat of my gabardines told me I wasn't slipping while my ears reassured me as to level flight.

I flew on, and on, and still no Oakland. Then I glanced at my watch. Twenty minutes had elapsed! Just as I started a little arithmetic, the fog broke, and there before my unbelieving eyes was—Mills Field!

I know I had made a 180° turn, but someday I'm going to sit down and figure out how many 360's I had made. I do know that watching my compass, I should have made the flight in 5 minutes.

Sincerely,

Martin H. Boisen
Glendale, Calif.

THIS MONTH'S BRAIN TWISTER

The following puzzle is sent in by J. L. Centanni of New Orleans:

Three planes were at New Orleans Airport for refueling with G.A.G. Only a certain amount of gasoline was available. Plane No. 1 took on $\frac{1}{2}$ of the gas available; plane No. 2 took 20 gallons; and plane No. 3 took twice as much as planes Nos. 1 and 2 combined. How many gallons were taken?

FUSSY AS AN OLD MAID

"Fussy fellows" come in for a lot of kid-



ding. You know the type—they're always tinkering, never satisfied that the engine couldn't be tuned a little better, or that a different cockpit arrangement wouldn't be more efficient. Strangely enough, most flyers are like this—they're fussy fellows about planes.

At Gulf, we're fussy, too. We were so fussy about Gulfpride Oil that we weren't satisfied with ordinary methods of refining. We wanted to get more impurities out. So we developed a special process to do it—the Alchlor Process.

As a result, more of the harmful carbon and sludge-formers are removed from Gulfpride—a high percentage more than in the case of most oils. That's why Gulfpride is such a safe, efficient lubricant. We know that when it comes to taking care of an airplane engine, you fellows appreciate extra fussiness.

THIS MONTH'S WHOPPER

Dear Major,

I had a car, but no more. If your G.A.G. wasn't so good, I wouldn't have flown my car, and if I hadn't flown my car, I'd still have it. Here's why:

I had a new car that would do 114. It seemed so light and smooth that I figured if I flattened out the fenders it would fly.

Well, it wouldn't quite take off, just bumped along the ground. Then I figured that if I was going to fly it, I ought to use aviation gasoline. So I trotted down to the hangar and borrowed 5 gallons of G.A.G. That was all it needed!

The car took off with the grace of a DC-3 and the speed of a P-40. The next day I was driving in town and some idiot wrinkled up my left fender. When I got out on the open road, I forgot about the fender and took off. Immediately I remembered it, 'cause the doggone car started to fly in ever-decreasing concentric circles, until it flew right up its own exhaust pipe and left me sitting on the gas tank 200 feet up. But with the G.A.G. in the tank I was safe as a church. I glided down



to a three-point landing, shouldered the tank, and walked fourteen weary miles back to the field. And that's how I lost my car.

Your footsore pal,

Max R. Carey,
Kelly Field, Texas.

Gulf Oil Corporation and Gulf Refining Company . . . makers of



GULF AVIATION PRODUCTS

Flight Tests Result in Improvements



NEW EFFICIENCY EXPECTED—With more than half of the Douglas B-19 bomber's long and exhaustive acceptance testing program now completed by the Army, investigations already have resulted in improvements to engine

cowlings, carburetion and other important functions. Numerous further flights are scheduled in coming weeks during which time it is believed the Army will investigate the practicability of firing a large cannon from the huge craft.

Important CAB Decision Gives All American 40c Air Mail Rate

All American Aviation will receive 40c per mile for carrying air mail with its pick-up and delivery system, according to a CAB rate decision issued Sept. 30.

The rate was effective as of Sept. 1, 1941. In addition, CAB awarded the company 46c per mile for the period Aug. 12, 1940, to Aug. 31, 1941. The 40c rate includes 3.40c for the messenger service provided by AAA. If, in the future, the Post Office Dept. should furnish this service, the rate will be dropped to 36.6c.

The AAA case gave the Board its first opportunity to view a pick-up operation from a dollars-and-cents standpoint, and for this reason may prove of importance to other prospective pick-up operators. The fact that it was necessary to set the rate as high as 40c—or 36.6c with P. O. messenger service—is not too encouraging for these operators, according to Washington comment.

Still in Early Stage

CAB's decision stated that "this service is still in an early stage of commercial evolution. Although a full year's operation has since been completed, the service has not yet developed to the extent that a true indication of its ultimate value is presented. It is obvious that the major portion of petitioner's revenues must be derived from mail pay

which currently will substantially exceed the postal revenues attributable to the service."

There is little chance of reducing the initial cost of a pick-up operation through development of non-mail revenue, some CAB sources feel. Some carriers, however, state that air express eventually will help lower mail costs. Nevertheless, CAB will move with caution in considering the applications for about 25,000 miles of pick-up service now on file.

Originating Mail

During the experimental year, according to CAB's decision, 73,946 lbs., or 1,356,521 pieces of air mail originated on AAA's routes. Postal receipts for this amount of mail, at 7.38c per piece (average quoted in P. O.'s cost ascertainment report), would total \$100,111.25, or 22.85c per revenue mile. A total of 74,917 lbs., or 1,327,898 pieces, originated on the various segments of AAA's AM49 from Aug. 12, 1940 to Mar. 31, 1941. Postal receipts were about \$97,998.85, or 25.26c per revenue mile. For the month of March, 1941, 12,961 lbs. or 239,031 pieces originated, giving postal receipts of \$17,640.48, or 31.04c per revenue mile.

"The total postal receipts estimated above cannot, however, be attributed to the existence of petitioner's service, as it may be assumed that a substantial part of this

Robbins Takes CAB Decision to Court

Hugh C. Robbins, whose commercial pilot certificate was suspended for 60 days by the Civil Aeronautics Board for flying over the British battleship "Malaya," has asked the Circuit Court of Appeals for the Second Circuit to review the CAB decision.

Appearing before the Court in New York on Oct. 6, Robbins' attorney asked that the certificate suspension be stayed while the Court considered the case. The Court took the matter under advisement.

Robbins flew a New York Daily News photographer to the "Malaya," anchored off Staten Island on Aug. 6, to take pictures. Following a protest filed with CAA by Secretary of the Navy Frank Knox, CAB ordered Robbins to show cause why his license should not be revoked or suspended for (1) flying at less than 500 ft. on a civil airway, and (2) flying closer than 500 ft. to another aircraft in flight. Although Robbins denied the charges at hearing, CAB suspended his license for 60 days.

"To use the special qualities of an aircraft, and the power that it gives its occupant, to maintain a persistent surveillance of a battleship of a friendly power, under the circumstances present in this case, would seem to be unreasonable conduct on the part of an aircraft pilot," CAB said.

"It is no less true that it is a clear case of unreasonable conduct on the part of a pilot to insist on maintaining a position within an area from which aircraft clearly identified with an agency of government are clearly endeavoring to warn him away."

NWA Research Dept.

Northwest Airlines has created a department of economic research, headed by A. E. Floan, former district traffic manager in Seattle. Floan now makes his headquarters in St. Paul. A study is being made of the economic characteristics of the areas already served by NWA and the sections to be covered by proposed new routes.

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TACA Head



Lowell Yerex

President of TACA, Central American airline, which is particularly noted for the large amount of freight it transports. Yerex was in Washington during the past fortnight to attend a CAB hearing on TACA's application for a route from San Jose to Cristobal and/or Balboa.

Nichols Committee Tours South America, Hawaii

THREE MEMBERS of the special House committee investigating airline accidents left Washington Oct. 9 for an extended tour of South America and Hawaii via Pan American Airways. Rep. Jack Nichols (D., Okla.), chairman of the committee, and Members E. M. Dirksen (R., Ill.) and Carl Hinshaw (R., Cal.) are making the trip, accompanied by William McEvoy, assistant vice-president of PAA.

The committee has virtually completed investigation of domestic air-lines and plans to make a thorough, first-hand study of the Latin American airline system with particular reference to the present program for American aid in developing airways in these countries.

Longest stops scheduled by the committee in South America are Rio de Janeiro, three days; Buenos Aires, two days; Santiago, two days; Lima, two days. After a two-day stop in Mexico City, the members will proceed to Los Angeles and then to Honolulu, arriving there Nov. 10. On Nov. 15, they will return to San Francisco.

No further hearings on domestic airline accidents are thought necessary unless new developments occur. The committee's staff is preparing a final report, not only as to the causes of airline accidents, but also containing recommendations for legislative action to relieve whatever hazards to air safety the committee decides can be handled by Congress. A presentation of the report to the House floor is being delayed until the end of the year.

KCS Makes Second Attempt for Airline

AFTER being turned down by the Civil Aeronautics Board once, Kansas City Southern Transport Co. on Sept. 25 filed application for a mail-passenger-property airline between Kansas City and New Orleans via Joplin, Tulsa, Muskogee, Ft. Smith, Texarkana, Shreveport, Alexandria and Baton Rouge, and from Dallas-Ft. Worth to New Orleans.

Service would include the co-ordinated air-rail transportation of freight in connection with Kansas City Southern Railway Co., parent, and Louisiana & Arkansas Railway, and other railroads, and a co-ordinated air-truck service in connection with KCS Transport Co., and other truck lines.

KCS recently was denied a Kansas City-New Orleans route when CAB found it was not in the public interest. Since the hearing, the new application states, there have been "vast changes" in the territory involved, with many defense projects underway.

During the first five years, KCS expects a loss of \$58,103 and profits of \$14,024, \$34,320, \$56,141 and \$82,038, respectively, or a five-year profit, after taxes, of \$101,451. Mail pay is estimated at 31c per mile.

Chicago-Atlanta Nonstop Denied

The Civil Aeronautics Board has denied Eastern Air Lines permission to inaugurate nonstop service between Chicago and Atlanta because it "would constitute a substantial departure from the shortest course between such points as determined by the route described in the certificate, and . . . such service may not be inaugurated unless and until the Board finds, upon application of Eastern . . . and after notice and hearing that the public interest will not be adversely affected by such service on account of such substantial departure."



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55 aircraft plants and all major airline bases visited in 7 week aerial tour of the aviation industry, plus numerous side trips by auto.



Aero Industries Technical Institute wished to know how the aviation industry wants its engineering, production, and maintenance personnel trained FROM NOW ON. Our Personnel Director, Donald E. Bladell, was sent on this comprehensive tour of the industry to find out. Mr. Bladell conferred with 193 personnel department executives and other plant and airline officials—the men with the answers to this question.

Now Aero I.T.I. knows better than ever what kind of men the industry wants, the classes of work in which men will be most needed, the phases of training that should receive greatest emphasis, and how men should be trained to be permanent assets to the industry.

Though Aero I.T.I. has already supplied 3,265 properly trained graduates to 129 firms in all divisions of aviation, this school now hopes to provide many more career-trained men even more closely meeting the exact requirements of aviation industry employers . . . and thereby also serving our graduates' own best interests.



C & S's New Memphis Base



CHICAGO & SOUTHERN Air Lines' new \$250,000 office building and overhaul base at Memphis Municipal Airport were dedicated Oct. 5. The office building is a two-story structure, 90 x 45 ft., and provides office space for general administrative functions of the airline. The overhaul base, 189 x 170 ft., is big enough to house six DC-3's. One side of the hangar provides facilities for overhaul shops, supply department, instruments and radio communication. A two-story structure on the north side of the hangar houses the operations department, including meteorology, reservations and offices of superintendents of engineering, maintenance and communications.

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Airline Personalities in the News



Shubart



Hawkins



Gamble



England



McInerney



Meardon



Anderson

CHARLES W. SHUBART has been appointed acting chief engineer of Mid-Continent Airlines.

PAUL HAWKINS, now acting superintendent of maintenance for Mid-Continent. **PHILIP B. GAMBLE** has been added to the traffic staff of Northwest Airlines at Seattle. Gamble studied aeronautics at the University of Minnesota.

W. ROBERT ENGLAND, formerly with United Air Lines in San Francisco and Seattle, has joined the traffic staff of Northwest Airlines at Seattle.

DON MCINERNEY, former Minneapolis newspaperman, has been added to Northwest's traffic staff in Portland. He is working under Dan Hutchins, new NWA dis-

trict traffic manager in Portland. Hutchins succeeded Guy Talbot Jr., who is signed to join Western Air Lines.

ROBERT F. MEARDON, former general foreman of line maintenance in New York for American Airlines, has been promoted to the position of maintenance supervisor in Chicago. He has been with American since 1928.

MISS MILLCENT ANDERSON, formerly Chicago news bureau representative for TWA, has been appointed executive assistant to William Van Dusen, director of public relations for Pan American Airways. She is located in New York.

Lamiell Appointed to Important P. O. Post

John E. Lamiell, former director of the Post Office's Division of International Postal Service, has been appointed Deputy Second Assistant Postmaster General.



Lamiell

While director of IPS, Lamiell was in charge of all P. O. foreign air mail matters. As Deputy Second Assistant he will be connected with domestic air mail, which comes under the jurisdiction of Second Assistant Postmaster General Smith Purdum.

A new director of IPS had not been named as this issue went to press.

Lamiell entered the postal service as a clerk in Canton, O., on May 19, 1894, later serving as superintendent of mail at that office before being appointed a post office inspector on July 11, 1914.

From 1914 to 1934, he was in the postal inspection service, during which time he spent three years reorganizing the postal service of the Republic of Haiti. In 1934 he was appointed director of IPS.

Export Airline-Steamship Tie-Up Might be Broken in TACA Purchase

AMERICAN Export Lines, the steamship company, might dispose of its stock in American Export Airlines in order to enable the airline to obtain CAB approval of purchase of TACA, Central American airline, according to Gerald Brophy, Export attorney.

Brophy's statement, made in oral argument before the Board on Oct. 2, was the first indication that the airline-steamship relationship might be broken to obtain CAB approval.

Oral argument was on the proposed report of CAB Examiner J. Francis Reilly, which recommended that the purchase be disapproved because of the so-called second proviso of Sec. 408 of the Civil Aeronautics Act.

(This section states: "That if the applicant is a carrier other than an air carrier, or a person controlled by a carrier other than an air carrier or affiliated therewith within the meaning of Sec. 5(8) of the Interstate Commerce Act, as amended, such applicant shall for the purposes of this section be considered an air carrier and the Board shall not enter such an order of approval unless it finds that the transaction proposed will promote

the public interest by enabling such carrier other than an air carrier to use aircraft to public advantage in its operation and will not restrain competition.")

Because American Export Airlines is controlled by American Export Lines, the steamship company, Examiner Reilly stated that in order to obtain approval of the purchase it would be necessary to show that TACA's aircraft could be used by the steamship company. This was not shown, he said.

Purchase of TACA by an American company is definitely in the public interest, Brophy said. He pointed out that the Board can grant the purchase, specifying that approval goes into effect if and when the steamship company disposes of its airline stock. This would eliminate the difficulty under the Act, he said.

TACA, Brophy said, is an essential part of Latin American life because of the services it performs, and control of this company by an American concern would be of benefit to the U.S., even apart from national defense considerations. He pointed out that the American Republics Aviation Division of the Defense Supplies Corp. is now trying to secure just such connections in Central and South America, adding that TACA is set up, running and "ready to be taken over by an American group."

If Export does not obtain approval to buy the company, there is nothing to stop Lowell Yerex, TACA president, from selling to someone else, possibly a foreign interest, Brophy said.

J. E. F. Wood, counsel for Pan American Airways, opposing the purchase, said there is "no escape from the language of the proviso." He questioned the Board's power to approve purchase subject to separation of the airline-steamship connection.

AA to Add Stops

American Airlines expects to inaugurate service on or about Nov. 1 to Bridgeport, Conn., and Niagara Falls, N. Y., and will reinstate service to Roanoke and Lynchburg, Va., and New Haven, Conn.

Aeronautical Charts

NEW EDITIONS of aeronautical charts are available from the U. S. Coast and Geodetic Survey, Washington, D. C. and from recognized dealers at major airports. Pilots are warned not to use old charts.

Regional charts, a series of 17 scaled at 1:1,000,000, sell for 40c; direction finding charts, a series of six scaled at 1:2,000,000, sell for 40c; and sectional charts, a series of 87 scaled at 1:500,000, sell for 25c. On orders grossing \$10 or more, including assortments, there is a 33 1/3% discount.

New Edition of Planning Chart

3060b. Sept. 1941. Size, 37 x 47". Scale, 1:500,000. Price, 40c. Covers the entire U. S. and has been revised to show the limits of civil airways.

New Editions of Alaskan Charts

PORCUPINE RIVER. Aug. 1941. Size, 20 x 31". Located in latitude 66° 30' 70" 30' N., longitude 132°-150° W., an area of about 158,000 sq. mi.

This chart completes the Alaskan series of eight charts. Lithographed in six colors. It shows names of topographic features in black; contours in brown; roads and trails in purple water areas in blue airports, isogonic lines, and radio facilities in red and land areas in buff.

ST. ELIAS. Sept. 1941. Scale, 1:100,000. Size, 23 x 30". Located in latitude 57° 40'-62° 40' N., longitude 133°-147° W., an area of about 129,000 sq. mi. Civil airways added.

New Editions of Sectional Charts

DETROIT. Sept. 1941. Size, 20 x 47". Located in latitude 42°-44° N., longitude 78°-84° W., an area of about 49,000 sq. mi.

Canadian civil airways and Saginaw radio range added and southeast end of Windsor range realigned.

MILWAUKEE. Sept. 1941. Size, 20 x 40". Located in latitude 42°-44° N., longitude 84°-90° W., an area of about 49,000 sq. mi.

Battle Creek, Saginaw, and Madison radio ranges added, and Rockford radio range realigned.

NASHVILLE. Sept. 1941. Size, 20 x 44". Located in latitude 36°-38° N., longitude 84°-90° W., an area of about 53,000 sq. mi.

Includes an accumulation of changes since the last edition, and realignment of radio ranges at Nashville and Smith Grove.

SALT LAKE CITY. Sept. 1941. Size, 20 x 41". Located in latitude 40°-42° N., longitude 108°-114° W., an area of about 51,000 sq. mi.

Civil airways and Ogden radio range added, and Ft. Bridges radio range realigned.

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Current SEC Reports

United Aircraft Corp.

Company has entered into five 2½% loan agreements with National City Bank of New York as a result of a like number of EPF contracts. The loans are as follows:

(1) As of Sept. 10 company borrowed \$9,486,699 under a loan agreement dated Apr. 30. Proceeds are to be used for acquisition and construction of certain plant facilities for use in manufacture of aeronautical engines. Total which may be borrowed is \$19,141,080. Notes due July 1, 1947.

(2) As of Sept. 10 company borrowed \$1,397,217 under a loan agreement dated Mar. 26. Proceeds are to be used for acquisition and construction of certain plant facilities for use in the manufacture of aeronautical propellers. Total which may be borrowed is \$1,961,746. Notes due July 1, 1947.

(3) As of Sept. 10 company borrowed \$1,819,322 under a loan agreement dated July 1. Proceeds are to be used for acquisition and construction of certain plant facilities for use in manufacture of airplanes. Total which may be borrowed is \$1,965,918. Notes due July 1, 1947.

(4) As of Sept. 11 company borrowed \$420,023 under a loan agreement dated May 1. Proceeds are to be used for acquisition, construction and installation of certain plant facilities for use in manufacture of aeronautical engines. Total which may be borrowed is \$9,796,920. Notes due July 1, 1948.

(5) As of Sept. 11 company borrowed \$61,238 under a loan agreement dated May 1. Proceeds are to be used for acquisition, construction and installation of certain plant facilities for use in manufacture of hydromatic propellers. Total which may be borrowed is \$1,035,400. Notes due July 1, 1947.

Timm Aircraft Corp.

Prospectus, filed in connection with its offering of 215,835 \$1-par common shares, states corporation on Sept. 18 withdrew an offering of 78,461 shares representing the unsold portion. G. Brashears & Co., the underwriter, is continuing to offer other shares as principal with none of the proceeds going to the company.

Kinner Motors, Inc.

Company has advised G. Brashears & Co., underwriter of company's offering of 54,940 \$1-par common shares, that B. B. Robinson, president, intends to sell 14,000 shares he holds to dealers other than Brashears, these shares representing the unsold portion of 26,150 shares made available for offering through Brashears by Robinson. The other 28,790 shares of the offering were held by Brashears. Both lots have been withdrawn from offering, but underwriter is continuing offering other shares as principal.

Consolidated Aircraft Corp.

Firm has applied for registration on the New York and San Francisco Stock Exchanges of 646,722 shares of \$1-par common to be issued as a 100% stock dividend of Oct. 27. As a result of this dividend, company states "there will be transferred from the surplus account of the registrant to its capital stock account the sum of \$646,722" or full par of shares to be issued.

Certified Junior Control Tower Operator, will go anywhere. W. K. Murphy, Jr., 1757 Camino Palmero, Los Angeles, California.

Financial Reports

Aviation Corp.—Company and subsidiaries report for nine months to Aug. 31 net income of \$1,459,649 after charges, against loss of \$327,896 for like 1940 period. Aug. 31 backlog was \$16,621,342.

Kellett Autogiro Corp.—Third quarter sales totaled \$484,015 against \$135,677 in same period a year ago; nine months sales were \$1,116,794 against \$425,977 in like 1940 period and \$738,478 for all of 1940. Major portion of the business was done under subcontracts. Backlog on Sept. 30 was \$3,092,603 against \$685,385 a year earlier. Company states backlog is made up largely of orders from U. S. Air Corps, Consolidated, Curtiss, Martin, Bell, Republic and Brewster.

Leece-Neville Co.—Statement for year ended July 31, shows net profit of \$637,635 (\$2.82 per common share) after \$648,864 provision for federal taxes against profit of \$224,290 in preceding fiscal year (99c) after \$61,764 provision for federal taxes.

Liberty Aircraft Products Corp.—Report for eight months to Aug. 31 shows net income of \$210,759 or \$1.05 on each of 200,000 common shares.

United Aircraft Products Corp.—In quarter ended June 30 had net sales of \$1,767,525 against \$832,517 year ago, bringing total for first half to \$3,302,776 against \$1,375,363 in 1940 first half. Sales for all of 1940 were \$3,639,937, and for 1939, \$794,050. Backlog on Aug. 27 was over \$9,000,000 against \$7,100,000 on Feb. 28. Directors recently authorized construction of a 20,000 sq. ft. machine shop building to cost \$112,000 and be completed by Dec. 1.

Vultee Aircraft Inc.—Earnings, subject to year end adjustments, are being unofficially estimated in Los Angeles at around \$2 per share for fiscal year ending Nov. 30, 1941. This would represent a very substantial recovery in current half in view of the loss of \$593,488 in half ended May 31. Sharp recovery is attributed to a speeding up of production and operating economies.

Aeronca Shares Offered

Aeronca Aircraft Corp. on Sept. 25 offered 30,000 shares of cumulative convertible \$15-par preferred stock. Stock was priced at \$15 per share. Underwriters were Bond & Goodwin Inc., Craigmyle, Rogers & Co. and Whitney-Phoenix Co. Inc. Offering was also made of 20,000 common stock purchase warrants at 10c per warrant.

Proceeds from the sale of the preferred, estimated at \$368,005, will be used to finance larger inventories, increase development work, pay off certain unsecured notes, purchase factory machinery, tools and equipment, enlarge plant and increase working capital.

Upon giving effect to this financing and the exercise of 65,000 common stock purchase warrants, including those in the offering, company's outstanding capitalization will comprise 30,000 shares of preferred and 190,938 shares of common.

By F. H. STEVENSON

FOLLOWING a lull of about two months in aircraft company equity financing, four firms in the past month have tossed proposed stock offerings into the Securities and Exchange Commission's hopper via the filing of registration statements—more activity than has been seen in any like period so far this year.

This development followed closely the recent upswing and activity in aircraft shares, which might well have been construed by the companies concerned as indicative of a reawakening of public interest in this section of the market as a result of reports of increasing profits and other factors.

However, this trend later reversed itself and what affect that will have on the proposed financing cannot, of course, be determined at this time, but it is logical to assume that a continuation of the downswing in the market will at least delay the offerings. The market fell off when indications developed that the Administration intended to place definite checks on possible runaway profits.

First of these was Treasury Secretary Morgenthau's recommendation for a 6% profit limitation, which may have been in the nature of a "trial balloon," but which was followed shortly by introduction in the House by Chairman Vinson (D., Ga.) of the Naval Affairs Committee, of a bill to limit contractors to a 7% net profit on all government defense orders—and a bill by Rep. Gore (D., Tenn.) setting an 8% profit ceiling.

Although only three of the stock filings represent new money financing and the dollar totals to be raised thereby are definitely not impressive in comparison with the vast sums being poured out under DPC and EPF contracts, it nevertheless is interesting and possibly very significant that these firms should choose to go to the public for funds through the machinery of the SEC, which is regarded by most financial men as cumbersome, expensive and leisurely, rather than to turn to government credit agencies. Even though the money may be used for purposes other than those for which DPC and EPF funds are available, it seems that the firms, all of them manufacturing companies, could get such funds through some other government agency if they desired and probably more quickly.

Expanded Financial Coverage

Readers are invited to suggest material they would like to have appear in this newly expanded financial section. Address letters to Financial Editor, AMERICAN AVIATION, 1317 F St., N. W., Washington, D. C.

The market for aircraft shares was not particularly active in the few days up to this writing, a relatively small number of shares changing hands on the Big Board and Curb. Price changes were mostly on the downside, but confined to small fractions. On the Curb the largest decline during five days was only ⅓ of a point and on the Exchange 2 points. The latter was a transport company stock (American). Curtiss-Wright Class A stock showed a small gain of ¼ point for the period, the only plus sign appearing in the list.

Aviation stocks listed on the NYSE as of Sept. 30 had a total market value of \$611,526,158 or \$19.27 per share. Companies filing registration statements were: Adel Precision Products Corp. (Sept. 30); Jacobs Aircraft Engine Co. (Sept. 25); McDonnell Aircraft Corp. (Sept. 17); and Air Associates Inc. (Sept. 27). Summaries of the registration statements will be found on the following page.

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Four Firms Register Stock Issues

Air Associates Inc.

Statement covers 50,000 shares of \$1.37½ cumulative convertible preferred stock and 100,000 shares of common reserved for conversion of the preferred. The common stock conversion price (each share of preferred is regarded at price of \$25) is \$12.50 through Sept. 30, 1943, \$15 through Sept. 30, 1945 and \$17.50 thereafter.

Of the proceeds, approximately 300,000 will be applied to repayment of a promissory note, \$200,000 will be used for machinery and the balance for working capital.

The principal underwriter will be White, Weld & Co., New York City. Other underwriters and offering price will be filed by amendment to the statement.

Officers, directors and common stock holdings: Gilbert Colgate, board chairman, 14,958 shares held of record and 17,748 held beneficially (does not include 2,718 shares held of record and beneficially by his wife); H. Leroy Hill, president, director, 7,778 record, 9,596 beneficially; Haven Page, director, 13,700 record, 13,700 beneficially (does not include 200 shares held of record and beneficially by his wife); H. I. Crow, executive vice-president, director, 4,935 record, 4,935 beneficially; Stephen A. McClellan, director, 50 record, 200 beneficially; George B. Post, director, 1,800 beneficially (does not include 100 shares beneficially, but not of record, by his wife); James B. Taylor, Jr., director, 3,406 record, 3,406 beneficially; Roland Palmado, director, 1,990 record, 100 beneficially (does not include 1,890 shares held of record, but not beneficially, by Palmado, nor does it include 2,088 shares held beneficially, but not of record, by his wife); Ray Acre, vice-president, 393 record, 393 beneficially; and G. S. Kleverstrom, secretary, treasurer, 150 record, 150 beneficially.

Salaries during the past fiscal year were as follows: Colgate, \$110; Crow, \$21,273 (includes \$12,625 salary, \$105 director's fees and \$8,543 for 772 shares of common stock); Hill, \$27,199 (includes \$14,250 salary, \$135 director's fees and \$12,814 for 1,157 shares of common); McClellan, \$135; Page, \$110; Palmado, \$110; Post, \$80; Taylor, \$85; Edward Latham (resigned as director on Dec. 11, 1940), \$110; Acre, \$9,410 (includes \$7,257 salary and \$2,153 for 193 shares of common).

On Mar. 5, 1941, the directors provided that Hill, Crow and Acre should receive additional compensation for the fiscal year ended Sept. 30, 1941, equal to 3%, 3% and ½%, respectively, of net profit after federal tax on income computed without deduction for such additional compensation. Cancellation of certain options to buy common stock held by Hill and Crow was in consideration for payment to them of 1% of net profits (as above) for each fiscal year from Oct. 1, 1940, through Sept. 30, 1945.

The company states it had more than \$5,000,000 in unfilled orders as of Sept. 15.

In nine months ended June 30, 1941, company had a net profit of \$320,226 on next sales of \$5,094,946. In the year ended Sept. 30, 1940, net sales were \$4,065,111 and net profit was \$409,266; fiscal year 1939, net sales, \$1,860,774, net profit, \$125,782; fiscal year 1938, net sales, \$1,844,522, net profit, \$125,588. Sales (fiscal years): 1937, \$1,450,367; 1936, \$1,045,114; 1935, \$688,272; 1934, \$454,216; 1933, \$250,296; and 1932, \$189,163.

Balance sheet at June 30, 1941; assets; cash and demand deposits, \$145,879; accounts receivable, \$778,341; inventories, materials, supplies, parts, etc., \$1,477,083, expended for plant and machinery to be reimbursed by DPC (\$121,379 reimbursed

since June 30, 1941), \$125,709; total current assets, \$2,527,014; property, plant, equipment, \$611,600 and deferred charges, \$205,973.

Liabilities: notes payable, \$700,000; accounts payable, trade, \$498,822; customers' deposits, \$100,503; liability to officers, \$15,070; redemption price preferred shares called for redemption, \$9,446; accrued liabilities, \$116,715; federal taxes on income, estimated, \$246,007; total current liabilities, \$1,686,565; long term debt, \$200,000; \$1-par common stock, \$134,905; and surplus, \$1,344,741.

Adel Precision Products Corp.

Registration covers 150,000 shares of 20c-par capital stock to be offered at \$3 per share. Principal underwriters are Cavanaugh, Morgan & Co., Lester & Co., both of Los Angeles, and Van Grant & Co., Detroit.

Proceeds of financing are estimated at \$450,000 of which \$360,000 will go to the company and be used as follows: to pay notes of \$22,000 and \$92,500; \$55,000 will be used for taxes for the fiscal year ended Apr. 30, 1941. In addition, \$178,500 will be used to discharge accounts payable.

Backlog as of Sept. 15 was approximately \$2,000,000. Principal customers are: Bell, Beech, Boeing, Brewster, Chrysler, Consolidated, Curtiss-Wright, Douglas, Ford, Grumman, Lockheed, Martin, North American, Murray Corp., Republic, Vega, Vought-Sikorsky and Vultee.

There are 500,000 shares of capital stock authorized of which 300,000 shares were outstanding July 31.

Officers, directors and capital stock holdings as of Sept. 12: H. Ray Ellinwood, president, director, chief executive officer, 53,600 shares held beneficially and 53,900 held of record; Beatrice E. Ellinwood (wife and more than 10% stockholder), 50,000 record-beneficially; Harold E. Webb, vice-president, 175 record-beneficially; Lynn Reynolds, director, chief engineer, 50 record-beneficially; Robert D. Cavanaugh, director, none; Paul M. Dollard, secretary, treasurer, none; R. S. Berry, director, 200 record-beneficially; Cavanaugh, Morgan & Co., underwriter, 16,000 beneficially, 20,320 record; and Lester & Co., underwriter, 8,770 beneficially.

Salaries for the past fiscal year were as follows: Ellinwood, \$14,500 (currently getting \$15,000 per year); William H. Lewis (resigned Sept. 2, 1941) \$11,000 from June 1, 1940, to April 30, 1941; Berry, \$4,230; Reynolds, \$3,050 (currently getting \$10,000); Webb, \$3,000 from Oct. 1, 1940, to Apr. 30, 1941 (currently getting \$7,200); Dollard is currently getting \$3,000 per year; and Svend A. Amdisen, assistant secretary is receiving \$5,400 a year.

Profit and loss statement for three fiscal years ended April 30, 1939, 1940 and 1941 as follows:

	1939	1940	1941
Sales	\$48,792	\$197,657	\$1,205,341
Cost of goods sold	19,417	80,048	776,394
Expenses	11,812	44,993	135,766
Federal tax provisions	2,914	16,007	120,000
Net income	13,950	56,850	150,937

Balance sheet as of Apr. 30, 1941: Assets: cash and demand deposits, \$37,437; accounts receivable, \$172,902; inventories, \$380,724; total current assets, \$591,064; property less reserves, \$381,646; tooling and deferred development expense, \$46,688; total assets, \$1,027,701. Liabilities: current obligations owing to banks, \$168,864; trade acceptances payable, \$11,421; accounts payable, trade, \$242,902; accrued liabilities, \$197,419; customers' deposits on sales orders, \$69,492; total current liabilities, \$688,100; long-term obligations owing to banks, \$29,899; total stated capital and surplus, \$309,701.

McDonnell Aircraft Corp.

Registration covers 6,453 1/6 shares of 6% noncumulative preferred stock and 64,531 2/3 shares of common stock to be issued in units of one share of preferred and 10 shares of common at \$140 per unit. Also covered are 64,531 2/3 common shares reserved for the conversion of the preferred on a 10-for-1 basis. The company notes that of the 10,000 shares of preferred authorized, 3,546 5/6 shares are now outstanding and of the 360,000 common, 49,846 1/3 shares are outstanding.

Proceeds of the issue are estimated at \$903,443, after provision for legal fees, etc., and will be added to working capital. There will be no under-

Officers and directors of the company with preferred and common holdings as of Aug. 15: James S. McDonnell Jr., president, director, 142 shares of preferred, 9,851 shares of common; Gardner W. Carr, executive vice-president, director, none; Laurence A. Smith, treasurer, secretary, comptroller, director, none; Wade T. Childress, director, 30 preferred, 300 common; Firmin V. Desloge, director, 230 preferred, 2,300 common; James Lee Johnson, director, 180 preferred, 1,800 common; Thomas S. McPheeters Sr., director, 30 preferred, 300 common; Boyle O. Rodes, director, 23 preferred and 530 common John E. Shepley, director, none; Edgar E. Rand, director, 100 preferred, 1,000 common; and L. S. Rockefeller, director, 341 1/3 preferred, 3,413 1/3 common.

The principal business of the company at present consists of sub-contracts for manufacture of aircraft parts for prime contractors. Backlog at Aug. 15 was \$2,438,945 of which \$2,336,195 is represented by estimated total cost, plus fees, on cost-plus-fixed-fee contracts. Approximately \$51,930 is represented by primary contracts for certain work for the War Department; \$50,820 is represented by fixed price contracts for parts of military aircraft for certain prime contractors of both the British and U. S. governments. Company states that the advanced stage of negotiations for primary contracts indicates that the amount of the company's backlog may be increased to a large extent.

In its profit and loss statement the company says that its operations up to June 30, 1941, were devoted principally to development work and preparatory production activities. "For this reason, all expenditures, less reimbursements and sales income, from incorporation to June 30, 1941, have been carried forward on the accompanying balance sheet, to be recovered or disposed of at times and in amounts not fully determinable at the present time."

Balance sheet at June 30, 1941: Assets: cash, \$39,593; accounts receivable, \$22,854; inventories of raw material, \$18,181; inventory of raw material property of prime contractors, \$45,825; expendi-

	1939	1940	1941
Sales	\$48,792	\$197,657	\$1,205,341
Cost of goods sold	19,417	80,048	776,394
Expenses	11,812	44,993	135,766
Federal tax provisions	2,914	16,007	120,000
Net income	13,950	56,850	150,937

tures reimbursable by DPC, \$20,397; reimbursements due from prime contractors, \$108,109; completed and uncompleted fixed price orders and projects, \$17,693; purchases of perishable tools and small equipment, \$17,688; expenditures since inception of company not otherwise classified, \$142,750; plant property at cost, \$234,456; total assets, \$629,439.

Liabilities: accounts payable, \$58,258; payroll drafts outstanding, \$21,307; accrued items, \$13,205; advances from a prime contractor, \$100,000; purchase money mortgage, \$42,500; and capital stock \$389,528.

Jacobs Aircraft Engine Co.

Registration statement covers 140,000 shares of \$1 par capital stock to be offered through Riter & Co., Philadelphia. Shares are being supplied as follows: J. Andrews Harris, 3d, 58,000 shares; Harry Payne Bingham, 50,000; J. Smith, 25,000; Nicholas S. Ludington, 4,900; and Wright S. Ludington, 2,100. Offering price will be supplied by amendment. None of the proceeds go to the company.

Company estimates it has a practical productive capacity for manufacture of engines and spare parts having net value, at present prices, of about \$500,000 per month, based upon two working shifts each of nine to 10 hours per day, six days a week. The company is now operating at this capacity. Office and manufacturing buildings have a combined floor area of about 133,600 sq. ft.

Unfilled orders on July 31 exceeded \$22,000,000 on a dollar basis of which about 28% is from the U. S. government, 55.4% from the Canadian government, 16.5% from Cessna Aircraft Co. for use in planes for delivery to Canadian government and 0.1% from all other purchasers.

Unfilled orders on June 30 to certain large suppliers were approximately as follows: Aluminum Company of America, \$1,285,000; Bethlehem Steel Corp., \$539,000; Bendix Aviation Corp., \$1,061,000; Thompson Products Co., \$481,000; and Ex-Cell-O Corp., \$1,063,000.

Officers, directors and their holdings of \$1-par capital stock as of Sept. 15, 1941: J. Andrews Harris, 3d, board chairman, vice president, director, 58,367 shares (includes 5,000 shares held of record but not owned beneficially); C. J. Abbott, president, director, chief executive officer, none; J. Story Smith, vice president, secretary, treasurer, director, chief financial officer, 78,000; Albert R. Jacobs, vice president, director, 21,432; Henry M. McFadden, vice president, director, 6,838; Hamilton D. Carpenter, director, 6,000 C. Townsend Ludington, director, 3,875 (held beneficially, but not of record); Nicholas S. Ludington, director, 10,844 (includes 1,317 shares owned beneficially, but not held of record); J. Brooks B. Parker, director, 592½; Charles I. Thompson, director, 324½; and H. B. Knerr, comptroller, chief accounting officer, none.

Salaries for the current fiscal year are estimated as follows: Harris, \$6,300; Abbott, \$120; Smith, \$12,120; Jacobs, \$37,100; McFadden, \$22,120; Cressman, \$9,584; Carpenter, \$225; C. T. Ludington, \$175; N. S. Ludington, \$250; Parker, \$250; Thompson, \$175 and Knerr, \$4,459.

Company gives the following earnings record: calendar year 1938, net sales \$390,387, net loss, \$146,048; 1939, net sales, \$449,924, net loss, \$101,851; 1940, net sales, \$1,386,271, net loss \$283,000 and six months to June 30, 1941, net sales \$3,689,211, net profit, \$275,713 (after deductions of \$165,000 for estimated state and federal taxes).

Balance sheet at June 30, 1941: Assets: cash, \$2,941,330; accounts receivable, \$155,223; inventories, parts and production materials, \$1,424,016, work in progress, \$609,970, and finished engines, \$14,047; total current assets, \$5,286,736; plant, property and equipment, \$204,086; emergency facilities, \$1,580,689; intangibles, \$418,632; total current assets, \$7,532,111.

Liabilities: notes payable, banks, \$700,000; accounts payable, trade, \$68,669; accrued taxes, \$262,632; accrued salaries, wages and bonus, \$93,535; advance payment of sales contract applicable to deliveries within one year, \$3,912,517; total current liabilities, \$6,662,355; advance payments on sales contracts applicable to deliveries after July 1, 1942, \$672,625; paid-in surplus, \$1,408,669; and operating deficit, \$532,000 (red).

American Aviation

A Magazine
Within a Magazine

EQUIPMENT NEWS

Weight Control - Aircraft Design Problem

New Rubber Derivative Replaces Aluminum in Aircraft Fuel Tanks



A NEW RUBBER derivative which can replace aluminum now used in the fuel tanks of aircraft and combat vehicles, providing greater protection against fuel leakage caused by bullet punctures or crashes was recently announced by P. W. Litchfield, chairman of the board of Goodyear Tire & Rubber Co.

The new product has been named "plioform." Crude rubber is used in combination with a rubber resin to produce the new plastic. The development is the result of the com-

pany's investigations along the lines of self sealing fuel tanks. The investigations revealed that the one weakness in the self sealing tank linings was that the outer aluminum shell of the tank would flare when hit by bullets and occasionally the metal splinters would hold open the punctures in the inner rubber lining.

Illustrated above are two tanks, one of Plioform and the other of the ordinary aluminum alloy, showing the variation in the .50 caliber exits in both materials.

Manufacturers Who Would Sell to Aircraft Industry Should Lighten Products, Minimize Heavy-Duty Emphasis

By E. J. FOLEY

AMONG THE MORE recently developed and highly specialized fields of aeronautical engineering is that of aircraft weight control and reduction. If we go back 10 years, we will find that this activity, limited as it was, was then handled by anyone who happened to have a little time on his hands. And yet, today, we have the Society of Aeronautical Weight Engineers, a national organization of these specialists, doing intensive research and missionary work to accurately control aircraft weights with an eye to even the slightest reductions.

It is generally conceded that one of the prime movers in this "weight conscious attitude" has been the air transport industry. To the air transport operator, useful load or payload is the real meat of the airplane and is naturally looked upon as a primary criterion for selection of aircraft types.

Various operators with differing operating conditions have estimated the dollar value of a pound gain in payload to be anywhere from \$10 to \$1,000 per airplane per year. A good average figure is thought to be \$20 per pound. Every ounce of weight reduction on an airplane enhances its saleability to the airline operator.

In the present day commercial landplane, it is estimated that the useful load varies from 30-40% of the gross weight, dependent, of course, on factors such as range. This leaves us with 60-70% of the gross weight as "weight empty"—the weight to which weight control and reduction must be applied. Weight empty may be divided into two classifications: First, that part directly designed and controlled by the aircraft manufacturer and secondly, purchased or customer-supplied equipment.

The first grouping includes wings, empennage and tanks; under the second heading, wheels, tires, valves,

carpeting, lighting fixtures, etc. On investigation, we discover that the manufacturer of the plane directly controls only one-half of the weight empty, leaving an equal amount on which he cannot exercise any direct restriction.

(However, weight control cannot be looked upon as a purely aircraft design problem. Other elements must be considered.)

Lockheed has recently compiled a customer-service presentation showing a potential weight saving of 167 pounds on the Lockheed 14 and 331 pounds on the Douglas DC-3, resultant upon the dozen changes and substitutions recommended therein.

The changes indicated include: replacement of heat and sound insulation with a new, thinner kapok material; change of plate glass in windows and windshield to a special optical resin; use of revised, lightweight stop nuts in place of old standard, etc.

Additional possible gains coming to mind at the moment, are: use of magnesium for aluminum alloy where it can be done without appreciably changing size or jeopardizing utility will give a 35% weight saving; fiber for metal in filler blocks and spacers; molded plastics for attractive and luxurious

(Turn to page 45)



WHAT do you do about motor fires? You can't hit them with portable extinguishers. You can't ignore them.

If you're prepared, you can kill them in 3 or 4 seconds.

A slender metal ring holds the answer. At the touch of a control it blasts out a cloud of fire-smothering carbon dioxide snow-and-gas. Flame and fire choke to death. That's how a LUX extinguishing system snuffs out motor blazes.

Airliners and fighting planes have, for years, carried a small cylinder full of compressed LUX gas harnessed to the protective

ring in engine compartments. On multi-engined planes a directional valve turns the LUX discharge into any motor which is in distress. LUX Flame Detectors give the alarm.

Do you know the full facts on LUX built-in protection against fire? Send today for your free copy of "White Magic."



**AIM ... SHOOT ...
KILL THE FIRE!**

For cabin protection you'll want the new pistol-grip trigger-control Kidde-LUX extinguisher. Pilots like its fast one-hand action in emergencies.

Walter Kidde & Company

Incorporated

1039 West Street, Bloomfield, N. J.



School Develops Trailer-Crane For Transporting, Lifting Equipment

AS ILLUSTRATED here, a new type trailer-crane of value in transporting and lifting aircraft engines or other heavy equipment around airports has been developed by Boeing School of Aeronautics and is in daily use at the school's base at Oakland, Cal.

Designed by Thure Anderson of the Boeing School staff, the novel unit consists of a trailer having a capacity of two tons and an adjustable crane with a lifting capacity of one ton. Attached to a car, the device can be moved with ease around an airport, through hangars and from one airport to another.

Overall length of the unit is 12 feet; outside width, 8 feet; and overall height, 14 feet. The trailer is equipped with vacuum booster brakes controlled from the steering column of the towing car. The lift boom is constructed of standard section 8-inch I-beam.

Legs at the rear of the trailer are held in vertical position by a



pin-in-slot and lie flat on the trailer when not in use. Support for the forward end of the trailer when detached from the towing car is provided by a small wheel adjustable vertically by a worm screw.

The unit was constructed to the school's specifications by Colson Equipment & Supply Co. of San Francisco.

Morrow Aircraft Corporation Develops New Type Brake Lock

A NEW TYPE of hydraulic brake lock is said to fill the need for a means of locking the brakes on an airplane by some device other than a latch on the brake pump cylinder.

This light weight unit, located between the pump cylinder and the brake cylinder, positively locks the brakes and maintains a uniform pressure on the brake system regardless of temperature.

A common problem has been the loss of pressure due to contraction of the fluid when the temperature drops or the building up of pressure when the temperature rises and expands the fluid between the time the brakes are locked and finally released.

Another problem in locking hydraulic brakes has been the elimi-

nation of pressure in the master cylinder, while the brakes are locked. This pressure tends to initiate leaks in the packing glands. This new brake lock, once in locked position, relieves all pressure from the master cylinders.

Exhaustive tests have been completed with particular emphasis on providing a leak-proof system that is automatically balanced regardless of outside temperature. Locking control is accomplished by Shakespear cable controls extending to each lock.

Weight of the unit as developed and now manufactured by Morrow Aircraft Corp., San Bernardino, Cal., is only 14 ounces and it will handle pressures up to 400 pounds per square inch.

Portable 'Tube' Light Speeds Plane Assembly

A PORTABLE fluorescent light, encased in a tube of transparent "Lucite" methyl methacrylate resin, is now available for providing adequate light in confined or inaccessible areas, such as may be found in aircraft assembly lines. The unit is light in weight, of low wattage and tough; it gives off spherical lighting, thus eliminating shadows in limited working areas.

The fluorescent light is cool-burning and emits daylight-like illumination; the "Lucite" tube provides good insulating properties, is extremely durable to protect the delicate fluorescent tube and transmits an unusually high percentage of light.

The new lights are manufactured by Del-Ray Products of South Pasadena, Cal. "Lucite" is produced by the DuPont Co. at Arlington, N. J.

Huge Motors Installed For Aluminum Works

THE LARGEST d-c motors ever built for the production of aluminum are now being installed in the Alcoa, Tenn., plant of Aluminum Company of America. Each of the two 5,000-horsepower motors built by Westinghouse will drive a 96-inch reversing hot mill that will roll aluminum ingots into slabs.

Built especially for this mill, the motors weigh 480,000 pounds each and have the greatest horsepower ever built into machines designed to operate at the slow base speed of 30 rpm. Normally, such motors operate at a base speed of 50 to 60 rpm.

Direct current required to operate each unit will be provided by a 4,000-kw motor generator set powered by a 6,500-horsepower synchronous driving motor.

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United Uses Rayon Plane Tires, Saves 16 Pounds Per Wheel

ADOPTION of a new type tire with rayon cords for its fleet of DC-3 Mainliners, replacing the conventional cotton cord type, has been announced by United Air Lines following a year of service testing of the new product.

W. C. Mentzer, United's chief engineer, states the so-called "rayon tire" is 16 pounds lighter per casing than the conventional cotton type for comparable strength and resistance to bruising from impact. Thus, each set of main wheel tires represents a saving of 32 pounds per plane.

In its service tests, United inspected the tires closely at 100-hour intervals for cuts and any other irregularities. At each 650-hour overhaul period, the tires were weighed to check the rubber loss, which was found to average 12 pounds for every thousand hours of service as opposed to 12 pounds for every 800 hours of service with the cotton cord type.

It is also claimed that rayon is more resistant to heat deterioration than the cotton cord.

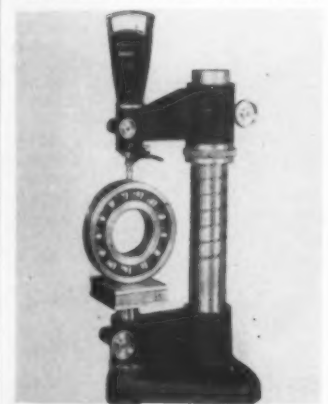
United has placed an order for 100 of these tires on the basis of their tests.

In the new tire, there are 30 rayon cords per inch as against 19 cords per inch in the cotton, thus affording better load distribution per cord. The tire diameter is 44"; section width, 17½"; total thickness at center, ¾"; rated load, 13,500 pounds; inflation pressure is 45 pounds.

Heavy Duty Comparitol Speed Nuts Offer Checks Large Units 80% Weight Saving

RECENTLY announced is the new Heavy Duty Model 8 Comparitol, designed to handle the accurate measurement of large and heavy precision work up to eight inches in diameter.

In the illustration, the unit is shown measuring a bearing six inches in diameter to an accuracy of 1/10,000 of an inch. In the mechanism of the instrument, a simple patented knife-edge lever system is used. The Model 8 has a 2½" diameter column, extremely



heavy holder bracket to hold the measuring head and a 4" by 4" hardened steel table, accurately lapped.

Three point contact on the base assures stability. The device is being used to check and inspect plug gages, bearings, pins, ball bearings and similar parts and may be obtained with scale reading to .0001" or to .00005".

Use of the unit under abnormal shop conditions where shock from machinery or instability of flooring would rule out some inspection devices, is entirely practical since vibration does not affect the unit.

Further details may be obtained from the manufacturer, George Scherr Co. Inc., 128 Lafayette St., New York City.

NEW flat-anchor type Speed Nuts have recently been manufactured for blind mounting and flush-blind mounting assemblies. They are said to offer many advantages in savings of cost and assembly time and they weigh only 20% as much as conventional fastenings of similar application.

These Speed Nuts are designed with a ball formation surrounding the prongs of the nut which is sufficient to span the standard dimpling for countersunk flat head screws or bolts.

Made of a special molybdenum spring steel, these nuts are said to have remained tight under the most severe vibration tests.

They are manufactured by Tinnerman Products Inc., 2083 Fulton Road, Cleveland, O.

New Compound Seals Aircraft Fire Walls

FIRE WALL Sealer is a liquid compound developed to prevent the transmission of gases, fumes, oils, etc., from the forward section of the nacelle or engine compartment into the aircraft proper.

Originally prepared for and now in use by one of the country's largest military aircraft manufacturers, the compound is easily applied with a brush and it is claimed to set or dry to a tough, permanently flexible, resilient body. It is not affected by oil, gasoline, grease or water.

Presstite Engineering Co., 3900 Chouteau Ave., St. Louis, Mo., is the manufacturer.

Dividends

Aero Supply Mfg. Co. Inc.—quarterly dividend of 37½¢ on Class A stock paid Oct. 1 to holders of record Sept. 19.

Aro Equipment Corp.—25¢ payable Oct. 15 of record Oct. 6. A similar amount was paid July 18.

Oster Hand Lathe Has 6-Position Turret

DESIGNED with hand feed to cross slide and manually operated, the Oster No. 601 Turret Lathe is furnished with six-position turret having six 1½ inch tapped holes in each turret face for mounting various sizes of tool holders. Among



the various operations performed by the machine are boring, reaming, threading, facing and cutting off.

Automatic chuck capacity is 1½" round bar, 11/16" square bar and 15/16" hex bar. Swing over bed is 14" and swing over cross slide is 6½". Carriage travel is 11" when there is a cross slide on the 33" main ways. Maximum movement of screw feed cross slide is 6½" and of lever feed cross slide is 4½".

The machine is furnished with either worm drive or direct drive depending on the required range of spindle speed. In the direct drive, for high speed work on small diameters and non-ferrous metals, the machine is equipped with a two speed, 2-hp. motor, driving the spindle through triple V-belts over a range of speeds up to 3,000 rpm.

Packer Designed for Anti-Friction Bearings

A NEW streamlined unit for packing grease into ball and roller bearings will, by the use of adapters, accommodate any bearing from 1½ inches to 7 inches. Designed to facilitate maintenance, especially of heavy duty equipment, the unit carries 5 pounds of grease in the base.

The cleaned bearings are placed on top of the cylinder and pressure on a lever forces clean grease completely through the bearing, filling all spaces. An advantage of this type of unit is that the clean grease is protected from dirt and contamination and even the heaviest grease may be forced completely into the bearing without waste. The unit is mounted on a stand and weighs only 40 pounds.

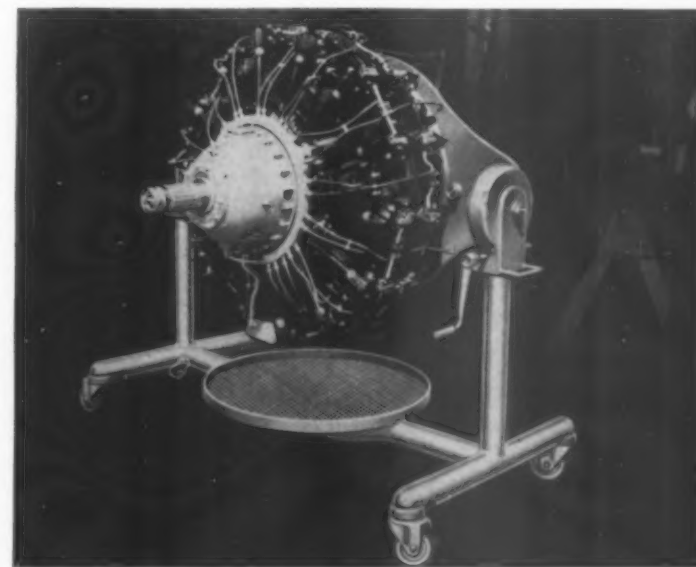
The manufacturer is Ahlberg Bearing Co. of Chicago, Ill.

United Aircraft Patents Composite Bearing

A PATENT on a composite engine bearing has been granted to United Aircraft Corp., East Hartford, Conn., maker of Pratt & Whitney aircraft engines.

The bearing comprises a steel shell which is internally lined with silver; the surface of the silver is roughened and has a layer of lead deposited on it electrolytically. The lead coating, which is only about 0.006 inches thick, may be finished by rolling.

New Engine Assembly Stand Announced by Whiting Corp.



SIMPLICITY and ease of handling are claimed as the features of the new portable engine assembly stand, illustrated above. The stand, originally designed by Karl O. Larson, chief engineer, Northwest Airlines, has been thoroughly serv-

ice tested. It is now available for all makes of radial aircraft engines.

This stand is one of a number of matched items now being built for the aviation industry by the aviation department, Whiting Corp., Harvey, Ill.

Gardner-Longines Flight Calculator Watch Believed Only One of Its Kind

A UNIQUE flight calculator watch which tells time, time out, speed and distance has been made by Longines-Wittnauer Watch Co. for Maj. Lester D. Gardner, vice-president of the Institute of the Aeronautical Sciences.

The design for the calculating features of the watch, drawn by Maj. Gardner, were sent to Switzer-



land where the hour, minute, and speed indications were engraved by expert dial engravers. So far as known, it is the only watch of its kind.

Around the center watch dial are two rotatable outer rings. The inner of these two rings is rotated by separate winding stem; the outer ring is rotated by hand. To calculate elapsed time the arrow "M" on the inner ring is set opposite the minute hand; and the arrow "H" on the outer ring opposite the hour hand of the watch, at the beginning of the flight. From these "fixes" the elapsed time of a flight is readily calculated.

The two rings are engraved with standard flight calculation scales. Distance, speed, and elapsed time can be determined when any two of the elements are known. The utility of the watch is enhanced by a stop-second, flyback action which can be used for continuous or intermittent timing, or for second-setting.

"I wanted a watch which would be more useful while flying," Maj. Gardner said, "but could find none which could have the calculator feature incorporated until I saw the special Longines-Wittnauer double movable bezel type. While this watch requires great precision in operation, I believe that it is a type which will be of such utility that larger wrist watches can be made to incorporate this feature and render a helpful service to pilots who wish to have a flight calculator always available."

Puritan Brake Fluid in Production for Planes

PURITAN Super Aircraft Quality Brake Fluid, developed on a research fellowship at Mellon Institute expressly for heavy duty, high temperature operation, is now being supplied as standard equipment on such aircraft as Stinson, Ercoupe, Piper, Bellanca, Culver, etc. It is said to mix completely with all existing brake fluids.

This hydraulic brake fluid is non-gumming, absorbs water and condensation throughout the system, has a boiling point 100° F. higher than any other fluid on the market and is passive to rubber. For refill purposes, it will form perfectly into a homogeneous solution with any other fluid that may have been in the system.

This new and improved version of the manufacturer's previous heavy duty automotive fluid is a product of Puritan Co. Inc., 573 Lyell Ave., Rochester, N. Y.

Mercury Lamp Measures Cloud Heights in Daylight

A 1,000-WATT mercury lamp developed for searchlights and television studios has been used to solve the problem of the daylight measurement of cloud heights.

Technicians of the National Bureau of Standards discovered that by projecting the light from one of the high-intensity water-cooled quartz mercury lamps and noting with a photoelectric eye the "splatter" of the light where it hits the clouds, the altitude can be determined by triangulation.

The projector consists of the lamp located at the focus of a 24-inch parabolic mirror having a 10-inch focal length. The "electric eye" detector consists of a vacuum-type phototube placed immediately behind a diaphragm with a slit opening 3/25 by 11/16 inch located at the focus of an 8-inch plano-convex condensing lens.

The narrow beam from the 1,000-watt lamp is projected into the air at a frequency of 120 flashes per second and the rays scatter where they hit the clouds. This light scattering is detected by the phototube located at a known distance from the lamp and adjusted for this flash frequency that will distinguish the beam from background atmospheric light.

The cloud height is then determined by the solution of the right triangle formed by the line of the beam to the clouds, the angle of the electric eyesight upon the clouds and the base line connecting the projector and phototube.

The lamps are the outgrowth of the search for a small light source of intensity and efficiency carried out by General Electric Co., Schenectady, N. Y.

Better Fabric Attaching Methods Available to Aircraft Industry



SUCCESSFUL results from more than a year of use in the mass production of a high performance airplane of the Airacobra class, together with an intensive test program under U. S. Army Air Corps supervision which began early in 1940 have caused Bell Aircraft Corp. to announce its intention to license for use by other manufacturers a new method of attaching fabric to aircraft control surfaces.

As illustrated here, the method of attachment employs a special tool which forces thin retainer strips into extrusions in the rib construction, thus holding the fabric covering tightly in place. Only a slight amount of pressure is required and the fabric is held tightly but without danger of tearing.

Reduction in cost, increased productive speed and additional strength of attachment are the advantages claimed for the process. Tests have not only shown the increased strength but further, that as additional pressure is applied, the retainer grips more tightly without marring the fabric. No holes are made and no patches are required over the retainer.

Time studies show a saving of 75% over the conventional stitching procedures and of 50% over the sheet metal screw attachment sys-

tems now available. Unskilled labor may safely be employed for this work.

Lucite Gauge Permits Easy Reading, Accuracy

A TRANSPARENT draft gauge of "Lucite" resin is the newest of a line of indicators fabricated from this clear plastic by F. W. Dwyer Manufacturing Co. of Chicago. Transparency enables the light to enter from three sides, providing high visibility under all conditions. DuPont produces the "Lucite" which is light and durable.

The new gauge is receiving favorable comment because it may be placed on a table, the floor or wherever convenient and readings taken from above. The location of the scale directly below and close to the indicating tube minimizes the possibility of error from parallax.

The gauge may be leveled by means of an adjusting screw and built-in bubble. The bubble is set in a polished bore, fully protected, yet visible from any angle.

Goodrich 'Chute Seat



ILLUSTRATED above is the new type parachute seat developed by the B. F. Goodrich Co., Akron, O., for use by military aviators. It is constructed of the cellular sponge rubber, latex. The pressure in the cushion may be regulated by the valve. This adjustment becomes necessary in high altitude operation because of the reduced atmospheric pressures.

United Air Lines Develops Plane Heating and Cooling Unit



THE CABINS of United Air Lines' Mainliners are being kept at comfortable room temperatures while on the ground through the use of a new "comfortizer" developed by the company.

As contrasted with other means of cooling used in previous airplane air conditioners, the new unit uses actual ice. Water from the ice is atomized and air is drawn through the resulting vapor before being pumped into the cabin.

With a capacity of 1,500 cubic feet of ice-cooled air per minute, the unit will reduce cabin temperature from 100 degrees to 80 degrees in 20 minutes. Due to the use of

vapor spray, six tons of cooling is obtained from 800 pounds of ice in the unit, according to United's engineers.

For heating, the unit has a standard Delco oil-burning furnace of the type used in a seven-room house. Capacity of the heater is 250,000 B. T. U.'s per hour. This, like the cooler is operated by a power takeoff from the motor of the GMAC truck on which the assembly is mounted.

As pictured above, the air conditioner was built to United's specifications by O. E. Wendt Co. and the Delco Appliance Division of General Motors Sales Corp.

Weight Control Factors

(Continued from page 41)

appearance of window frames and interior gadgets will save 40-50% in weight over aluminum alloy. Where practical, a reduction even in the number of finish coats will save weight.

Remembering that in the case of the DC-3 given above, if we use the average dollar value of \$20 per pound, such a plane could earn for its operator an additional \$6,000 per year, we can readily realize the great importance of weight control.

We mention this annual added earning figure to impress the several parties involved in the reduction and control of aircraft weights: the aircraft manufacturer, the vendor supplying materials or equipment and the transport operator. We have seen that the aircraft manufacturer can directly control about one-half of the weight empty. His consciousness of this responsibility is reflected in the staff of weight engineers retained to assure this control and the detailed, specific procedures developed and followed to assure minimum weight of all manufactured components.

Among the points of note borne in mind by the manufacturer are: reduction of gage of material where possible, simplification of parts and elimination of all but essential parts, use of spot welding, reduction of the number of pieces in any one assembly, use of beads or stiffeners on thin gage material, application of flanged lightening holes, substitution of formed for extruded sections, use of forgings.

Manufacturers who would cater

to supplying to the aircraft industry should initiate and maintain investigations into the possibility of lightening their product whether it be plywood, interior fabric, hydraulic valves, electrical motors, flexible conduit or tube fittings. All other things being equal, it must be realized that the aircraft manufacturer who tries to sell his product on a weight-saving point, will, accordingly buy equipment for that product on a weight saving basis.

The fact that many of the equipment manufacturers have heretofore been designing for heavy-duty, continuous industrial application may readily be reflected in the weight of their product. Such application is not a criterion in aircraft manufacture, in most instances and the equipment maker may well have to redesign his line along an entirely new track to compete for aircraft business.

The present volume of new, lightweight materials and equipment items would seem to indicate that the necessary point of view is being adopted by more and more manufacturers under pressure of the defense program.

An interjection at this point to the effect that the material and equipment manufacturer who can indicate unit weights of his product in his catalog or illustrative literature will be doing the aircraft manufacturer a great favor by enabling him to use a specific, correct weight rather than an estimated value for that one-half of the weight empty that is made up of purchased

or furnished equipment from propeller to tail wheel.

Having disposed of the parts played by the aircraft manufacturer and material or equipment manufacturer in our "reducing" drama, we have yet to consider the air transport operator, who is the ultimate winner or loser in the whole deal.

He buys the airplane with the realization and appreciation that for his operating conditions, it will have a certain payload, from which he is to realize any operating profit.

In the course of service, there is an inevitable decrease in payload, due to service pickup, if nothing else.

However, pickup may account for a very small part of the increase; we have to consider the installation of kick plates to keep passengers from putting their feet through the wall panels, of heat control units to assure even cabin temperatures, of brackets to accommodate dining trays, etc. Patches on fuselage or wing may add up to an appreciable weight.

From the foregoing, we see that the operator must utilize a comprehensive system of weight change records and exercise a close control over all weight additions to his aircraft, if he is to continue to realize most of the payload for which he bought the ships.

The need for this control is not mentioned, because of its absence in the transport industry, all operators have some such device, but rather, because it is thought that in all cases, due regard for the importance of this control is not evidenced.

It is not our part to say under what department this control should come, but it would appear that a

section of the line's engineering staff might be best able to anticipate and head off any unnecessary weight additions along with controlling even the small necessary items.

Adding up all of the items of our discussion, it appears that weight control is an aircraft design problem in the strict sense of the word, only to the extent of about half of the weight empty of the aircraft.

For the balance of the weight empty, we must contend with the propeller and engine manufacturer, the pump manufacturer and the carpet maker, etc.

All these parties must have a full appreciation of weight's importance in aircraft and must make every possible effort to lighten their product to meet the application.

Finally, we have the operator, who wishes to profit from his payload. If he is to do so, he must exercise restrictions over all additions, and by recording as elaborately as deemed advisable all weight changes, thus keep himself posted on gains and losses in his earning power.

As a clearing house for the interchange of ideas on the subject of weight reduction and control with all the attendant problems, we can think of no better agency than the Society of Aeronautical Weight Engineers mentioned earlier.

Within this group should come the aircraft manufacturers, bringing their weight consciousness to the equipment maker and the operator; the equipment manufacturers bringing their products for consideration from a weight standpoint by the other two parties; and the operators to assure themselves that they are taking advantage of the latest and best methods for insuring maximum payload operation.

CONSOLIDATED
Catalina
Flying Boat
Equipped with
SOLAR
Exhaust Systems

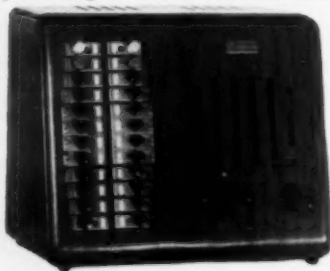
Solar Aircraft Company
Main Office and Factory: SAN DIEGO, CALIFORNIA
Eastern Office and Factory: PHILADELPHIA, PENNA.

Famous Airplanes, Solar Equipped—Third Advertisement of a series

Announces Powerful New Communicator

AS ILLUSTRATED here, a new integrated executive communicator station provides high power for contacting selectively up to 20 stations or paging all such stations simultaneously.

Substations can be private and free from eavesdropping or remote, permitting a man to converse with



the executive station though he may be many feet from his station. Earphones can be added to this model, providing the option of loud speaker amplified operation or confidential reception of incoming messages. The station stands 10 inches high, 12 inches wide and 9 inches deep, housed in an acoustically designed cabinet.

When less than 20 stations are used, additions to the system can be made at any time without disturbing the original installation.

This new executive station is made by Executone Corp., 415 Lexington Ave., New York.

Electric Power Systems 'Designed for Defense'

PLANNED as units, new, designed-for-defense, "packaged" electric power systems have all their parts—generating equipment, load center power units, unit substations, distribution transformers and switchgear-coordinated electrically, mechanically and thermally in advance of installation.

Through the use of these packaged units, it is claimed that time normally required for designing and building a conventional system can be reduced by from four to eight months. All apparatus in the system

is metal enclosed for protection and safety.

To assure reliable function under conditions of warfare, the systems are so designed that power continues to be supplied to unharmed parts even after one area has been damaged. Each of the systems include two or more regular sources of power supply, using tie-ins with outside generating facilities wherever available.

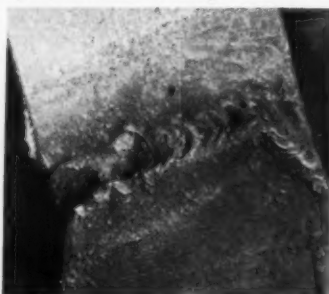
General Electric Co., Schenectady, N. Y., is designer and manufacturer of the units.

Galv-Welded Joint Endures Long Exposure

ILLUSTRATED here is a Galv-Welded joint after more than four years exposure to the weather. The absence of rust on this specimen is said to be typical of the applications of this new process now available to the metal fabricating and allied industries.

This process permits the welding of galvanized or other sheet and structural metal parts regardless of size, so that the joints are left in a rust-proof condition.

In the case of galvanized welding, regalvanizing is accomplished at the time of welding and no redipping is necessary. An additional advantage of the Galv-Weld process is that



it permits the painting or enameling of a joint without danger of sweating. No filler coat is needed.

National distribution of the required materials to licensed users of the patented process will be made through the sales organization and distributors of Metallic Products Division of Eagle-Picher Lead Co. of Cincinnati. Galv-Weld Inc., the developer who has been using the process successfully for over four years on light and heavy galvanized members, is located in Dayton, O.

Boeing School Introduces Modern Radio Receiver Diagram

ANOTHER visual education aid has been developed by the radio communications department of the Boeing School of Aeronautics in the form of an operating schematic diagram of a modern radio receiver.

The diagram is of a conventional six-tube superheterodyne circuit employing a stage of radio frequency amplification and automatic volume control. Each symbol in the circuit diagram represents an actual part mounted on the back of the panel. Component parts are wired together as in the circuit diagram and perform the same as any radio receiver.

In demonstrating the receiver's operation, plugs and jacks are used

to change the value of the resistors and capacitors as well as to stimulate "shorts" and "opens" in the circuit.

Contact buttons are supplied at the symbolized tube elements so that voltage readings may be taken to determine that the proper resistance is used to provide the desired characteristics.

Boeing instructors say that symptoms of inoperative or defective parts of a radio receiver are readily understood from the plugging arrangement and that a clear picture of the function of each part is obtained by studying the schematic diagram.

Experts Recommend Standardization of Aircraft Batteries at 24 Volts

WORK DONE at the National Bureau of Standards in an effort to solve the problem of increasing weight in aircraft electrical systems resulted in recommendations for standardization on 24-volt batteries, supplying maximum power for minimum weight.

The calculations made in this investigation indicated that 24 volts is the optimum voltage for a single-engine aircraft and that standardization on this voltage would meet the requirements for a large number of planes.

For large airplanes, where aux-

iliary power plants are used, experts found that it may be desirable to supplement the standard 24-volt generator-battery system with a higher voltage alternator or direct current system without battery.

The project was sponsored by the Bureau of Aeronautics, Navy Department. A detailed discussion of the project and the methods followed in working out the optimum voltage will be found in Research Paper RP1247 which may be obtained from the Superintendent of Documents, Washington, D. C., at cents each.

Aided by Mitchell Light Tester

WITH THE aid of a new device, "Fluorescent Tester," fixtures, bulbs,



starters and ballasts in fluorescent lighting systems may be tested to determine cause of failure and assure efficient operation.

Since the unit, as illustrated here, will tell immediately which of several components needs replacement, it should no longer be necessary to return the parts to the factory; nor is it even necessary to remove fixtures from the ceiling.

All size lamps, from 15 to 100 watts and starters and ballasts for all these sizes may be tested with the equipment. The tester is compact enough to fit in the palm of the hand and weighs only a pound.

The maker, Mitchell Manufacturing Co., Chicago, is distributing the units through leading electrical supply distributors for \$7.50 each net.

Plomb Releases Sockets For Allen Type Screws

SOCKETS for all common sizes of socket head cap screws and set screws (Allen type) are now available in hand tools. These new sockets are made for use with the various type of Plomb attachments.



Socket sizes are from 1/4" to 5/8" for hexagon openings from 1/8" to 3/8".

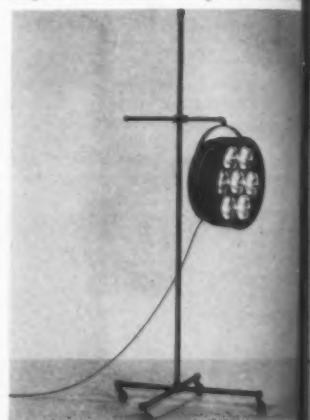
Special alloy steel is used for endurance and strength in meeting the conditions involved. The drive plug is made separately from the socket part and is held in place with a set screw. In the event the drive plug breaks, it need only be removed and a new one inserted, thus saving the socket.

The manufacturer of the line is Plomb Tool Co., 2209 Santa Fe Ave., Los Angeles, Cal.

Paint Dryer Works From Inside Coat Out

THE NEW Trippe Dryer, shown here, is said to cut to a fraction the time previously required in drying lacquered, painted or enameled surfaces. This dryer offers a high heat density of more than 700 watts per square inch of face area.

The portable unit is equipped with seven G-E R-40 Infra-Red generating bulbs spaced for maximum drying effect and of appropriate wavelength to assure the penetration of



the rays through the surface layer of the finishes. Accordingly, drying proceeds from the inside out at a uniform rate.

A feature of the unit is the three-switch flexibility which permits five different combinations of lights giving 250, 500, 750, 1,250 or 1,750 watts as required by the area to be dried.

Trippe Manufacturing Co., 504-570 W. Adams St., Chicago, is the maker.

Motor-Generator Aids Battery Charging

IN A NEW type motor-generator recently announced, both units are mounted on a single set of couplings, doing away with the possibilities of misalignment, coupling wear and resulting noise.

The new type unit is being furnished in all models of Battery Boosters, developed and manufactured by W. D. Foreman, 24 E. 54th St., Chicago, Ill.



Our Ramparts are in the Sky

WHETHER you live in a large city or small, in the East or in the West, plying a trade or following a profession, your world has changed to a world of the airplane.

You are seeing men, mail and merchandise moving not only by road and rail and water but also in the thoroughfare of the universal sky.

Here in the United States you have seen New York and Los Angeles re-located... just overnight by air from one to the other. You have seen the Atlantic spanned in a single day instead of many. You have seen whole armies ferried across the face of Europe, Asia and Africa... by air! The

fixed points about which the World's affairs have eddied for so long have become suddenly mobile.

The change—so swift that not all have been able to heed it—comes to this:

Our ramparts, our frontiers, are in the sky. Here will our freedom be defended and made secure. And here will our commerce and our trade—the things we live by—become increasingly fluid, flexible, expansive.

This is your new world. It starts from where you are and reaches everywhere. You can be swept along with it, or you may choose to advance with it. But you are certain to move with it!

AMERICAN AIRLINES Inc.

ROUTE OF THE FLAGSHIPS

DESIGN SIMPLICITY Reflected in Production

ANTI-ICING PUMPS • ANTI-ICING SELECTOR VALVES • DIRECT DRIVE HYDRAULIC PUMPS • FUEL INJECTION PUMPS • SINGLE, DUAL, TRIPLE, QUADRUPLE AND QUINTUPLE HYDRAULIC SELECTOR VALVES • THREE-WAY SELECTOR VALVES • PRESSURE REGULATORS • HYDRAULIC ACTUATING CYLINDERS • BY-PASS VALVES • RELATED EQUIPMENT ITEMS • HYDRAULIC FLUID FILTERS • FUEL FILTERS • FUEL INJECTION PUMPS • LINE SUPPORT CLIPS • PURPOSE LINE SUPPORT BLOCKS • "ADELITE" SYNTHETIC RUBBER C

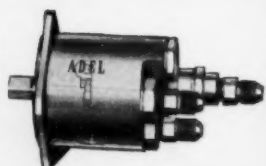
ADEL Series "J" standardized multi-purpose, direct drive, vane type fluid metering pump—for carburetor, propeller and windshield anti-icing protective functions.



ADEL Line Support clips—PROVEN—43,000,000 in use on U. S. Army Air Corps, U. S. Navy, British Air Ministry and Commercial Aircraft—under every conceivable condition in all parts of the globe.



ADEL Hydraulic Control Valve—one of four basic assemblies upon which are predicated over fifty single, dual, triple, quadruple and quintuple standardized selector valve units.



QUARTERLY DELIVERIES

OCT. 31
\$1,325,456
(estimated)
1941

JULY 31
\$919,344
1941

APR. 30
\$594,996
1941

JAN. 31
\$304,269
1941

OCT. 31
\$201,643
1940

JULY 31
\$125,771
1940

APR. 30
\$89,434
1940

JAN. 31
\$66,839
1940

OCT. 31
\$25,455
1939

Eastern Sales Engineer
J. HENRY REISNER
Hagerstown, Maryland

"AIRLINES ARE LIFE LINES OF DEFENSE"

ADEL

PRECISION PRODUCTS CORP.

10777 VAN OWEN BURBANK, CALIFORNIA